

MARCH 1919 ~ No 158

Monthly

A Reference for Buyers

HITCHCOCK'S
**MACHINE
TOOL LIST**

Distributed Free to Machine Tool
Users Everywhere in the United States and to
Dealers in American Machinery Abroad

Published by
A. H. HITCHCOCK
1220-1235 Caxton Building
Chicago

Type A.S. Adjustable Speed RELIANCE MOTORS

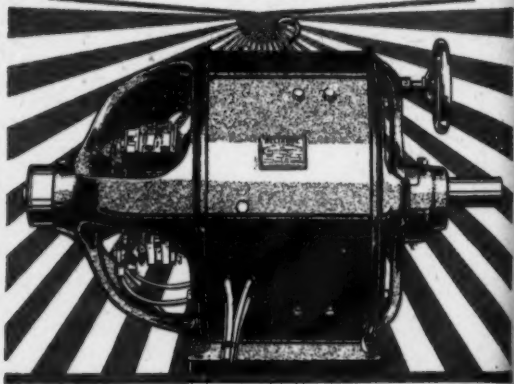
For Machine Tools

Type A S Reliance Motors have all the features necessary to make machine tools turn out every job in record time. It pays to use them.

Bulletin 1014 shows how others have done it

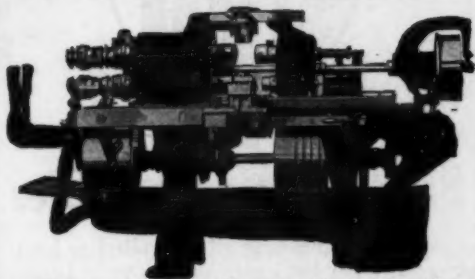
Reliance Electric & Engineering Co.
1050 Ivanhoe Road, Cleveland, Ohio

Branch Offices:
New York, Philadelphia, Pittsburgh
Chicago



ACME

"Standardization"



Every year more users of screw machine equipment have learned the advantages of "Acme Standardization" thru experience in the following important facts:

Unvarying stability of construction,

Production that is Dependable both in Quality and Quantity,

Adaptability of Tooling even to many kinds of operations formerly done after the work leaves the screw machine.

These are the logical results of Acme Standardization. May we tell you "how many" from your samples?

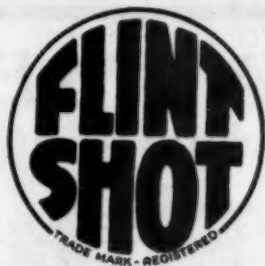
Capacities up to 3 $\frac{3}{4}$ " diameter stock

THE NATIONAL ACME COMPANY
NEW ENGLAND PLANT WINDSOR, VT. **Cleveland, O.** CANADIAN SCREW PLANT MONTREAL, P. Q.

Branch Offices:

NEW YORK BOSTON CHICAGO DETROIT ATLANTA SAN FRANCISCO
WAREHOUSES—NEW YORK, CHICAGO With FOREIGN REPRESENTATIVES

Makers of Gridley Single and Multiple Spindle Automatics at Windsor, Vt., and Acme Automatics, Threading Dies and Screw Machine Products at Cleveland, Ohio



"Flint Shotting" Saves Tools and Dies

By sand-blasting all hot-rolled or heat-treated steel before it goes to your lathes, planers, shapers, etc., you multiply the life of the cutting tools; because mill and furnace scale are powerful abrasives.

You will also save destruction of dies by Flint-shotting hot-rolled plates and sheets before pressing or forming.

Send for "Little Journeys of the Flint Shot Man" for interesting experiences along these lines.

United States Silica Company

1941 Peoples Gas Building,

Chicago, Ill.




*Specify
B&S Cutters*



STANDARD
CUTTERS
IN MANY STYLES
AND SIZES

Special and
formed Cutters
singly and in
gangs to order

Send for
Cutter Catalog
27-S



**BROWN & SHARPE
CUTTERS**

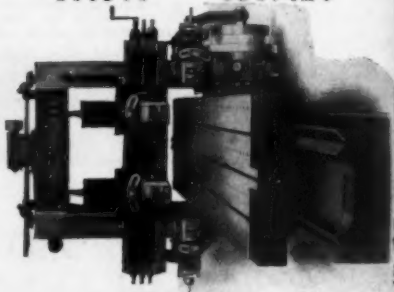
The cumulative result of fifty
years of experience in the extensive
use as well as the extensive
manufacture of milling cutters.

**BROWN & SHARPE MFG. CO.,
PROVIDENCE, R.I., U.S.A.**

Record Makers for Production and Economy

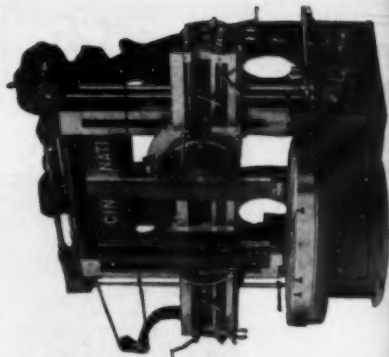
Cincinnati Planers

The splendid results users are getting with Cincinnati planers are a revelation of efficiency and economy. Send for our book, "Planer Operations;" you will find it interesting in itself, and especially valuable for its suggestions.



Our Boring Mills

Are great producers. The operator has the speed he wants and the feed he wants instantly available, so that he has no trouble in working his machine at highest efficiency all the time. Let us tell you how this is saving money both on difficult and easy jobs.



*All information for
the asking*

THE CINCINNATI PLANER CO.,

Cincinnati, Ohio, U. S. A.

Cin

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scale

labor

hand

than

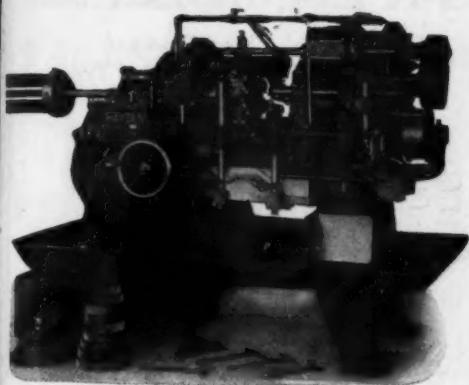
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Th

Five Spindles Against One That Means Real Production



The 5-Spindle Cincinnati Automatic

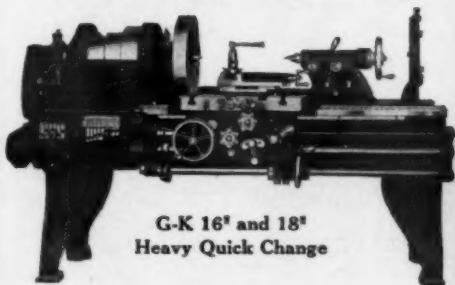
reduces the cost of screw machine work by more than trebling the output, and as one man is able to handle three machines, it is easy to see how the labor cost is reduced even in spite of rising wage scales. Its 48 superior features make it especially an economy tool, of particular interest to the manufacturer interested in cost-cutting.

We like to hear from men who want to be shown. It gives us a chance to prove up

Cincinnati Automatic Machine Co.
Oakley, Cincinnati, Ohio

From 16 to 30-Inch
G-K Engine Lathes

**Heavy Quick Change Type and
Geared Head Single Lever Control Type**



**G-K 16" and 18"
Heavy Quick Change**

THE BETTERMENTS in G-K Engine Lathes have placed them in the van as practical lathe producers.

The location of the headstock and tailstock back of the center line of bed is an example of the betterments in G-K design. This brings the tool pressure inside the V's, even when turning large diameters. It insures perfect alignment under strain and eliminates the possibility of carriage creeping on the ways, tool chatter, etc.

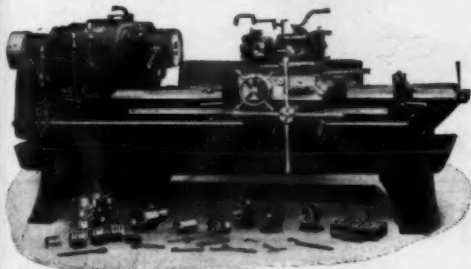
*Write for description of G-K Betterments
For reducing costs and increasing output*

The Greaves-Klusman Tool Co.
Cincinnati, Ohio, U. S. A.

The **CINCINNATI-ACME**

Flat Turret Lathe

The most rigid turret lathe made
For machining detail parts in quantities

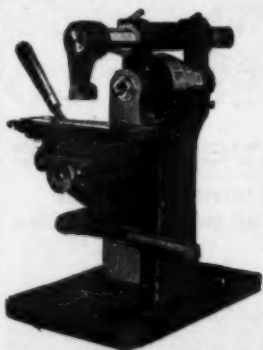


$3\frac{1}{4}$ x36' Bar Capacity. 16' Chucking Capacity.

Many of the shrewdest manufacturers have become thoroughly converted to the Cincinnati-Acme way of machining their detail parts in quantities, because of the unusual adaptability of this machine to a wide range of both bar and chucking work, and because in spite of high-priced labor it has materially reduced their production costs.

May we acquaint you with some of its production records, and at the same time show you what it can do on your own work, without cost or obligation?

The Acme Machine Tool Co.
Cincinnati, Ohio, U. S. A.



Burke's No. 3 Bench Millers

Are Seasoned Tools

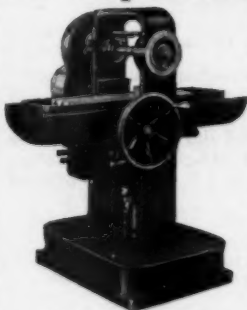
Our system of tests insures accuracy, and our methods of construction make it permanent. Frames and parts are carried 6 to 8 months, after work begins on them, before the completed tools receive our final O. K., and all parts are finished and fitted with exceptional care.

Longitudinal feed, 6 in.; traverse feed, $3\frac{1}{2}$ in.; vertical motion of knee, 64 in.; table surface, 30×12 inch.

Write for Catalog, which also shows larger and smaller sizes.

The Burke Machine Tool Co.
Conneaut, Ohio

For Rapid and Heavy Cuts



Helps to keep shop costs down. Manufacturers soon become enthusiastic over the splendid performance of the

Briggs High Duty Milling Machine

It is a top-notch for form and gang milling of auto and gun parts, etc. Also ideal for tool rooms and machine shops of every size. Takes the heaviest cuts in hard steel without chatter.

If interested in economy, write for particulars

GOOLEY & EDLUND, Inc., Cortland, N. Y.

"Whitney" Hand Miller

THOUSANDS IN USE



Specially handy for the Tool Room. A wide variety of cuts can be quickly set up and completed without any sacrifice of the accuracy so essential in Tool Room work.

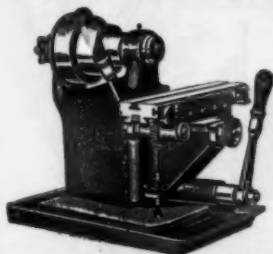
Prompt Deliveries

But they are going fast. Don't wait! Send your order in at once.

The Whitney Mfg. Co., - Hartford, Conn.

Chains—Keys—Hand Milling Machines

Just The Machine



for those light cuts on details for Fire-arms, Sewing Machines, Typewriters, Bicycles, Electrical work, and a thousand and one other details used in the manufacture of the various products of the manufacturing world.

Send for descriptive circular

The Carter & Hakes Machine Co.
West Winsted, Conn., U. S. A.

AGENTS—for New England and New York, Hill, Clarke & Co.
WESTERN AGENTS—Marshall & Huschart Machinery Co.,
Chicago, St. Louis, Indianapolis.

**Dickow's
Index
Centers
Knock
Out
Worry**



Their superior accuracy, simplicity and durability is worth money to you.

Patents Pending



PROMPT DELIVERY

For Accuracy Get Dickow's

Sold by dealers. Write us today.

Fred. C. Dickow, 35 So. Desplaines St., Chicago, Ill.

BECKER



Continuous Millers

If you are interested in reducing your costs by machining your duplicate pieces continuously, thereby increasing your production and effecting big savings, buy a "Becker" Continuous Milling Machine.

Becker Machines equipped with Becker Hi-Speed Cutters are noted for their production and efficiency.

Write for particulars today

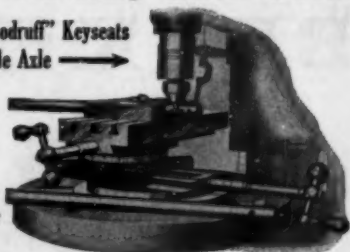
Becker Milling Machine Co.

Hyde Park, Boston, Mass.

Mills On Any Drill Press

Cutting "Woodruff" Keyseats
In Automobile Axle →

For the
Garage
Diemaker
Repair Shop
Patternmaker

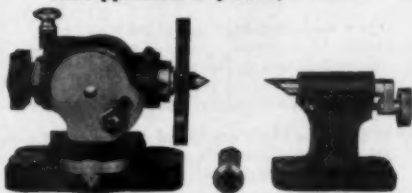


The Davis Milling Attachment and Compound Table can be used on any drill press from 14 to 42-in. swing. It is equally valuable in big and small shops, as it does most of the lighter jobs as well as a large, expensive machine; cuts all kinds of keyseats perfectly. Our cylinder reamers for reboring the Ford car, and our efficient air compressor are also attractively priced. Send for circulars.

Hinckley Machine Works, HINCKLEY, ILL.

You Don't

Put a First-Class Tool Maker On
An Apprentice Boy's Job, Do You?



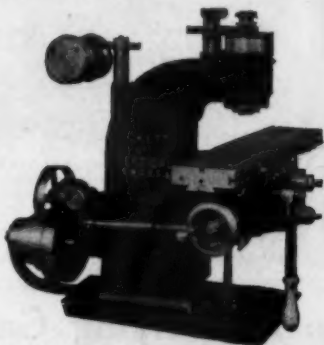
Then why use a large, high-priced miller where with our *Semi-Universal Dividing Head* you can use a low priced *Hand Miller*? You can use these centers for all kinds of straight milling, leaving the more expensive *Universal Miller* open for more intricate work. Write for full description.

Whiting & Comstock

32 Union Place,

Hartford, Conn.

No. 1 Bickett Style C
Vertical Milling Machine
Back Geared, Power Feed



Longitudinal Feed, 16' - Transverse Feed, 5' - Vertical Feed, 8'.

Ball bearing throughout.

Will make substantial cut with 2" end mill.

Guaranteed to run at as high a speed as
any end mill will stand on any kind of material.

A money maker for the die maker.

Write for Circular "U"

Bickett Machine & Mfg. Co.
1110 Richmond St., Cincinnati, O.



Hartford Taper Gages And Accurate Tapers

Accuracy in tapers is essential.

This essential quality can be secured more quickly and easily with Hartford Taper Gages than without them.

They are inexpensive, and they save more than they cost. In fact, they save their cost over and over again.

Query: Can you afford to be without them, if what we say is true?

Another query: Aren't you willing, at least, to spend one of Uncle Sam's postage stamps to find out about them? We shall be glad to hear from you, and you'll be glad you wrote.

And why not now?

Hartford Special Machinery Co.

285 Homestead Ave.,

Hartford, Conn.

The Amplifying Gauge

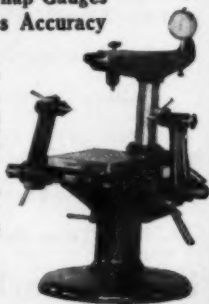
**Does the Work of Many Snap Gauges
Saves Time and Promotes Accuracy**

Why use a long line of snap gauges, when you can get a single device that is so much better?

The Amplifying Gauge does not leave you to guess how much over or under size a piece may be, but shows every inaccuracy in ten-thousandths.

It handles parts of any shape up to 5½ in. on the plate and 8" between centers.

Used by the U. S. Government and large automobile concerns.

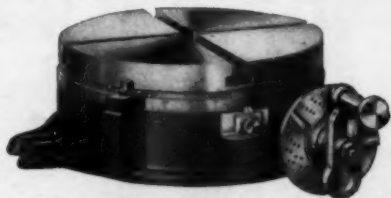


Write for Catalog No. 100

THE NORTH SIDE TOOL CO.,

Dayton, Ohio

Cochrane-Bly Co. Circular Tables



12" Plain Table with Dividing Attachment



12" Plain Table and 10" Compound Table with Hand Feed

For use on Milling Machine, Slotter, Planer, Shaper, Drill Press and Boring Mill in the manufacture of Dies, Punches, Jigs, Fixtures, Gauges, Templates, Cams, Formed Cutters, and Miscellaneous Machine Work.

Circular and Prices on Request

Cochrane-Bly Company
Rochester, N. Y., U. S. A.

FULTON Heavy Duty Turret Lathe



This up-to-date Lathe embodies the latest and best in modern machine shop practice. It is an efficient combination of first-class workmanship and high grade materials.

18 1/4-Inch Swing
7-Foot Bed

*Send for full specifications
and the interesting price.*

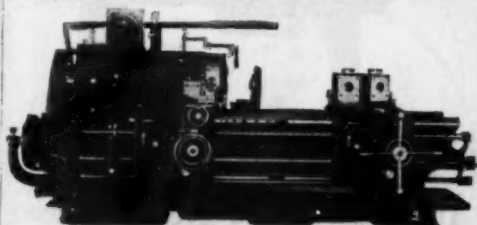
FULTON MACHINE TOOL CO. 1438 Bryan Place, Chicago, U. S. A.

DISTRIBUTORS:—Manning, Maxwell & Moore, Inc., Chicago and New York
Strong, Carlisle & Hammond Co., Cleveland and Detroit
Dale-Brewster Mober, Co., Inc., Chicago and New York

STEINLE TURRET MACHINE CO.

MADISON, WISCONSIN

Originators of the Heavy Duty Full Swing Side Carriage Turret Lathe



Steinle 24" Full Swing Side Carriage Turret Lathe

Machine is regularly furnished belt driven or arranged for motor drive.

Actual swing over ways.....	24"
Swing over side carriage.....	21"
Diameter of hole through spindle.....	4" or 6 1/2"
Traverse of side carriage and of turret carriage	56"

Both carriages have independent quick change feed and independent power traverse all controlled from carriage aprons.

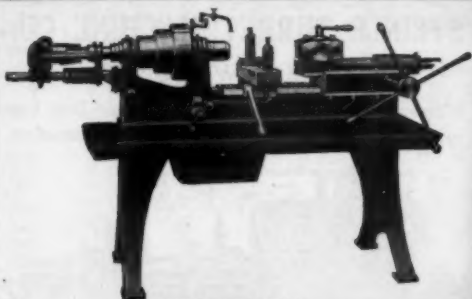
Side carriage can be run past the chuck and is equipped with cross slide having power cross feed and with turret tool block having four tool holders.

There are thirty reversible spindle speeds available. One belt or one motor furnishes power for all functions of the machine.

Turret is massive and designed particularly with a view to rigid support of tool equipment.

Send us drawings of gas engine fly wheels, cylinders where cast singly, pistons, and piston rings. Let us give you production estimates and the cost of tool equipment for these and other pieces and also let us tell you the time required to change the tool settings for the different pieces.

Numerous repeat orders received from many of the principal manufacturers of tractors, trucks, aviation motors, marine gas engines, and stationary engines demonstrate the satisfactory results obtained from the use of our machines.



MODEL "D"

Turret Lathes and Screw Machines

Now Ready for Delivery

**Designed for Rapid Manufacturing of
Parts Requiring Several Operations**

MADE IN FOUR SIZES:

- No. 2 { $1\frac{1}{8}$ " Wire Feed Capacity, Plain Head
 { $1\frac{5}{8}$ " Hole Through Spindle.
- No. 3 { $1\frac{5}{8}$ " Wire Feed Capacity, Plain Head
 { $1\frac{3}{4}$ " Hole Through Spindle.
- No. 4 { $1\frac{5}{8}$ " Wire Feed Capacity, Geared Head
 { $2\frac{1}{2}$ " Hole Through Spindle.
- No. 5 { $1\frac{5}{8}$ " Wire Feed Capacity, Geared Head
 { $2\frac{3}{4}$ " Hole Through Spindle.

**With or Without Power Feed to Turret Slide.
Mechanically Perfect and Fully Guaranteed.**

Manufactured By

Smurr & Kamen Company

328-330 N. Albany Ave., Chicago, Ill.

THE TILTED TURRET

A CLEAR TRACK — THE STOCK



*This Job Complete in
2½ Minutes*

The TILTED TURRET MACHINES

are **accurate** and **productive**.
Fifteen years' of thoroughly
tested service. A size for
every class of manufacturing.

Ask the User

Catalog "H"—Its Free

WOOD TURRET MACHINE CO.

BRAZIL INDIANA U.S.A.

Monarch Lathes

give universal satisfaction to the user. They have been doing this for years, and this accounts for the ever increasing demand for **Monarch Lathes**. Built in all styles and with any attachments desired.

Sizes 10 to 30-inch Swing

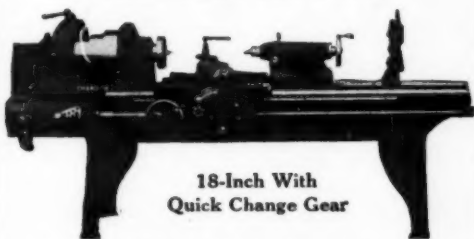
*Sold by a leading Machinery Dealer
in every machinery center.*



The Monarch Machine Tool Co., Sidney, Ohio

The Super-Quality "Chard"

And Dollars and Cents



18-Inch With
Quick Change Gear

The more quickly, and the more cheaply, a lathe will do properly the work required of it, the better lathe it is. It is a question of production and cost—of dollars and cents.

It is with that viewpoint in mind that we have built into the "Chard" the cream of our 35 years' experience in high grade lathe building.

We are proud of the result. The "Chard" handles heavy work with an ease, speed and accuracy which insures a maximum output with the highest possible degree of lathe economy.

*Made in sizes 16", 18", 20", 24" and 28"
Put us to the test on the size you need*

Chard Lathe Company

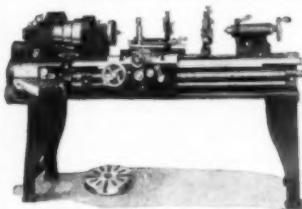
Newcastle, Ind.

DOMESTIC DISTRIBUTORS

THE F. O. STALLMAN SUPPLY CO., San Francisco, Cal.
VONNEGUT MACHINERY CO., Indianapolis, Ind.
ENGLISH & MILLER MACHINERY CO., Detroit, Mich.
OGDEN R. ADAMS, Rochester, N. Y.
THE W. M. PATTISON SUPPLY CO., Cleveland, Ohio.
J. S. MILLER MACHINERY CO., Pittsburgh, Pa.
MONARCH MACHINERY CO., Philadelphia, Pa.
DALE-BREWSTER CO., Chicago and New York.

A "Filsmith" Keeps Costs Down

The New Features Increase Efficiency



3-Step Cone
Double Back Gear
Q. C. Gear Box
Any Length Bed
14" and 16" Swing

Whether used on a straight run of ordinary work or for the extra hard job, the "Filsmith" has ample power and sturdiness to stand the "grief." Details are interesting—send for the full specifications.

PHILIP SMITH MFG. CO., SIDNEY, O.

The 18" Heavy Duty Mueller Lathe

Is a Machine That Is Worthy of Investigation

It is a Lathe that is built for hard and constant service, and nothing but the best material is used in its construction. The machine was so designed that we can guarantee permanent accuracy and durability of all parts. Liberal dimensions throughout, and several distinctive features.

Write for further particulars, and let us convince you of the worth of this Lathe

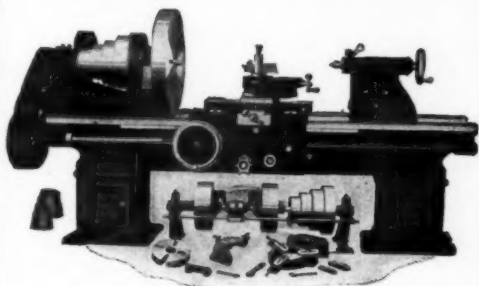
The Mueller Machine Tool Co.

Radial Drills and Lathes

Established 1902

Cincinnati, Ohio

South Bend Lathe



24 in.x10 ft. Screw Cutting Engine Lathe.

South Bend Lathes are made in six sizes—13", 15", 16", 18", 21" and 24" swing, with beds from 4' to 16' in length. Furnished with either straight or gap bed.

South Bend Lathes have been on the market thirteen years. Over 20,000 in use. Dealers in every large city.

Reasonable Price Lathes

Send for free Catalog illustrating and describing entire line

South Bend Lathe Works

Established 1906

South Bend, Ind.

East End

Crawford Lathes



Also Made
with
Geared Head

Standard Type D
15" Tool Room Lathe

Belt or
Motor
Drive

Made for a discriminating trade and to give satisfaction under the most exacting conditions.

Crawford Machine Tool Co., Inc.
21 Park Row, New York

Sidney Heavy Duty Lathes

15", 17" and 19" Swing



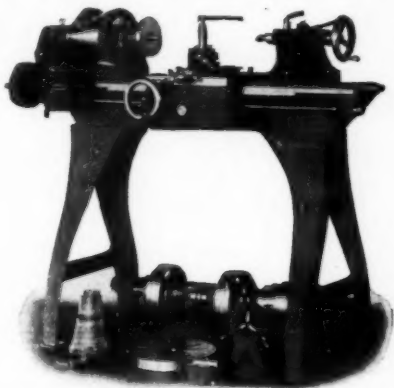
S. or D. B. G. ; Plain or Q. C. G. ; Beds from 6' Up

In applying its genius to the big task of "Peace" industries, America will profit by its many costly war lessons. Make-shift tools are dear at any price. Sidney Lathes made good under the stress of war conditions, their efficiency and accuracy will save you money now. Write for the specifications.

THE SIDNEY TOOL CO., SIDNEY, OHIO

"Worcester" Means "Quality"

A Small Lathe of Sterling Dependability



11" "Worcester"—Compound Rest and Power Cross Feed

A high grade machine tool that will continue to give top-notch service long after the price is forgotten. It is of first class workmanship and materials throughout, and dependable for the most exacting work.

In design the "Worcester" is unusually simple and complete—there's no further expense for "extra" attachments. We specialize on 11", 13" and 16" sizes, cone or geared head, pulley or motor drive.

Glad to send you the complete specifications

Worcester Lathe Company
68 Prescott St., Worcester, Mass.



Armstrong Clamps and Dogs

All Shapes
All Sizes

Best Quality—Alloy Steel
Screws

Complete Catalog Free



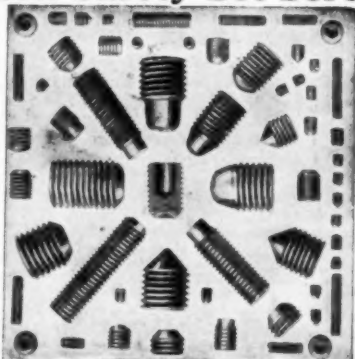
Armstrong Bros. Tool Co.

"The Tool Holder People"

308 N. Francisco Ave., Chicago, U. S. A.

Allen Safety Set Screws

Absolute Safety—30% Stronger



Uniform Threads—Clean Socket Holes

Write for folder and free samples for testing

ALLEN MFG. CO., - Hartford, Conn.

"THE SMALL LATHE FOR THE BIG JOB"

"DALTON SIX"

**METAL WORKING
LATHE**
Actual Swing 7 1/4 Inches
MODEL TYPE "B-4"
30 OR 36 INCH LENGTH OF BED



Standard Machine
Mounted with Standard
Type High Legs



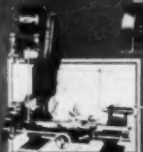
Super Attachment Fits
any of our Machines



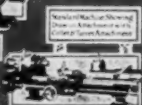
Standard Machine
Mounted with Cabinet
Type High Legs



Standard Bench Type



Standard Bench Machine
Mounted with
Motor Drive



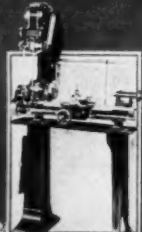
Standard Machine Showing
Drive on Attachment with
Cabinet Type Attachment



Standard Machine
with Fly Wheel,
Mounted



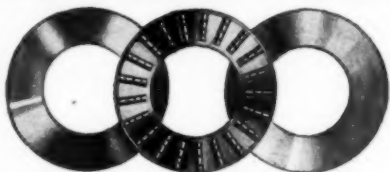
Standard Machine High
Legs with Wheel and
Lower Type Tail Stock



Motor Driven Machine
with Cabinet High Leg
Mounting Removable Motor

MANUFACTURED BY
DALTON MANUFACTURING CORPORATION
NEW YORK, U.S.A. CABLE ADDRESS "ALEDAL" NEW YORK

COMPLETE BULLETINS SENT ON REQUEST



BEARINGS

LIGHT DUTY

HEAVY DUTY

ALL TYPES

MANY SIZES IN STOCK

THE GWILLIAM COMPANY

ENGINEERS

253 WEST 58th ST., (at Broadway), NEW YORK

Branch, 1314 Arch St., Philadelphia

Abbott Steel Bearing Balls

High Grade—Highly Finished



We shall be glad to have your inquiries and make estimates

The Abbott Ball Company

Elmwood District, Hartford, Conn.



The Genesee—

An Adjustable Hollow Mill

Which Replaces Hundreds of Solid Tools



Its adjustability to the 1,000th of an inch gives it the range of hundreds of solid tools, and it is stronger and better in every way.

One set of blades outlasts three to five solid tools, and then may be replaced at small cost.

It never clogs up with chips and cannot change in size, as a solid tool will do after a few grindings.

Cuts 12" to 15" a minute in steel, and utilizes machines to their full capacity. Saves time and money. Increases production.

No shop should be without them. One set of a few tools covers the entire range from $\frac{1}{4}$ " to 2".

Write for description and prices.

Genesee Manufacturing Co.
Rochester, N. Y.

Worth From 6 to 10 Men For Lifting and Lugging



The Canton Portable Floor Crane and Hoist—"The Handiest Tool in the Shop"—pays for itself quickly, and it draws no wages.

Think of the men it will save, and the time and money and accidents it will save, without costing you a penny on the pay-roll.

In the larger shops it is a most valuable adjunct to the overhead system, and the smaller plants who are using it regard it as indispensable.

The several sizes are described in Booklet E-8

CANTON FOUNDRY & MCHE. CO., Canton, O.

ELECTRIC EUCLID HOISTS

Let OUR Engineers Save YOUR Time

It is possible that you realize the need of modern material handling equipment but cannot spare the time or men to work out the details.

Our engineers are constantly solving these difficulties and helping manufacturers reduce expenses.

Furthermore, this service is absolutely free.

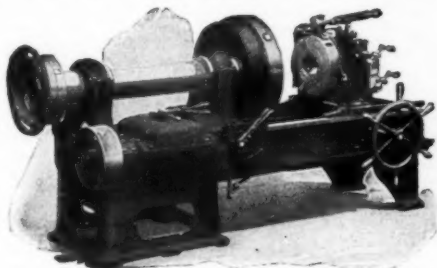
Will you take advantage of it?

The Euclid Crane & Hoist Co.

Dept. C

EUCLID, OHIO, U. S. A.

Rock-bottom economy is yours with B. & K. pipe machines



(No. 4 Peerless. Belt Drive. All Gears are Covered.)

WE ARE SPECIALISTS in up-to-date pipe threading machinery—the kind that enables you to produce a maximum quantity of accurate work daily.

Our 17 styles and sizes with their many improvements and conveniences, afford you a choice of just the right machine for your work. We have the machine for the small shop, and can also furnish whole batteries for the big plant.

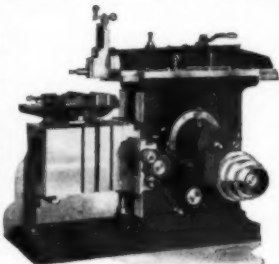
B. & Ks. do away with all guess work regarding the right threading speed; adjustments are made instantly; dies can be changed without removing a screw.

*Let us mail you the whole story of
the many conveniences embodied*

Bignall & Keeler Machine Works
Edwardsville, Ill.

COLUMBIA **HEAVY DUTY SHAPERS**

Liberal bearing surfaces throughout. Taper gibs on crank block, rocker block, saddle and ram bearings. Rocker arm is extra heavy, with integral tie. Driving cone and other shaft bearings are ring-oiling. Strength and durability are prominent features. Made in sizes 16", 20", 24" and 28".



Full specifications upon request

The Columbia Machine Tool Company
Hamilton, Ohio

Shapers

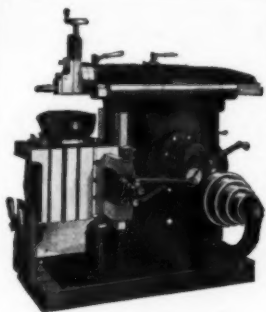
The best medium priced Shaper on the market.

Built in 16", 18", and 24" sizes, all back geared crank machines.

A few for early delivery.



The Osborne & Sexton Mchy. Co.
Columbus, Ohio



Step toe Shapers *and* Millers

are the product of seventy-three years
of experience in the manufacture of

High Grade Machine Tools

Thousands of our machines in shops
giving daily satisfaction are a recom-
mendation for our product which should
not be overlooked
when buying shapers
and milling machines.

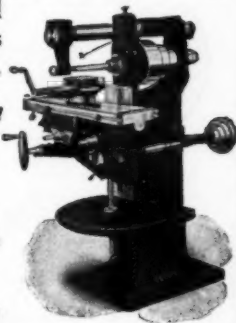
*We will be glad to send
catalogues on request*

—The—

John Steptoe Co.

Stock Yards Station

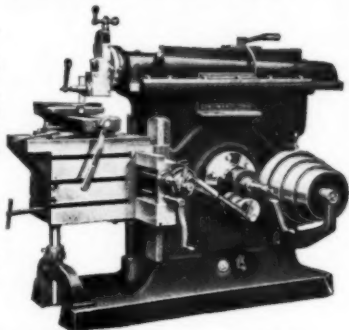
Cincinnati, Ohio



SHAPERS

12", 14", 16"
Plain Crank,
16", 20", 25"
B. G. Crank,
either Cone
Driven or
through
Speed Box.

28" and 32"
Back Gear-
ed Crank,
Single Pul-
ley Drive.



The Smith & Mills Co. Station B.,
Cincinnati, O., U.S.A.

The Etna Rotary Swager



For pointing, tapering or reducing stock to any circular form within limits of a few thousandths of an inch.

It strikes 3,000 or more powerful blows a minute with a pair of grooved revolving dies.

Often multiplies production over power hammers *five to ten times*, producing work more accurate to size and perfectly round—no flat spots.

Made in regular sizes to swage $\frac{1}{4}$ " to $4\frac{1}{2}$ " diameter. Any reasonable change in size made to meet your requirements.

*The Catalog explains fully
Write today for your copy*

The Etna Manufacturing Co., TOLEDO,
OHIO

Rhodes' Economy Tools

7" Horizontal Shaper—3½" Vertical Shaper
In Combination or Separate

Save
Time



Save
Space

These exceptionally handy and efficient machines, with all the essential features of the larger machines, are real economy tools for the expeditious and accurate handling of small work, including dies and tools, and all small shaping and slotting.

Besides the floor types we also build them in the vertical and horizontal bench types. They save in first cost and in cost of operation and maintenance.

Write us for the complete, interesting data

Rhodes Mfg. Company
Hartford, Conn.

Case Hardo

The Ideal Quick Case Hardening Compound

Eliminates dangers of operator being overcome by poisonous fumes.

Hardens quicker, cleaner and deeper than other agents.

Used the same as other agents, but at much lower heat.

The efficiency of CASE HARDO is fully guaranteed.

Write for information and prices

Manufactured Only By

The Thos. Buchanan Company

29 W. 3rd St.,

Cincinnati, Ohio

Established 1886

We Do Not Claim

B-G CASE HARDENING COMPOUND

To Be BETTER Than Cyanide

WE DO CLAIM THAT IT IS EQUALLY

**SATISFACTORY &
MUCH CHEAPER**

You will agree with us when you try it

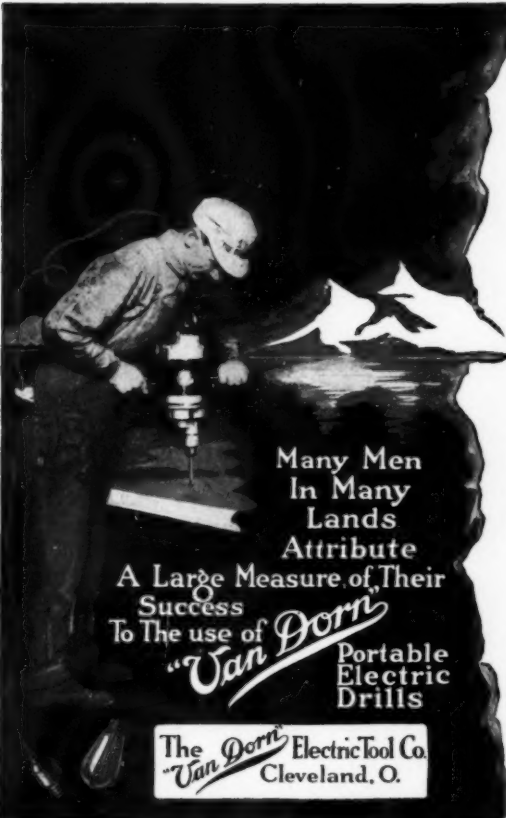
LUMP OR POWDERED FORM

Write for Booklet

Bell & Gossett Co.

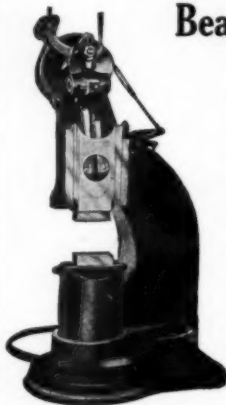
613 West 30th St., Chicago, Illinois

Phone: Boulevard 2067



Many Men
In Many
Lands
Attribute
A Large Measure of Their
Success
To The use of *"Van Dorn"*
Portable
Electric
Drills

The *"Van Dorn"* Electric Tool Co.
Cleveland, O.



Beaudry Hammers

For General Forging

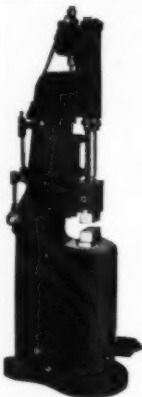
Saves Fuel, Time and Labor.
Cuts Forging Costs in Two.

Belt or Motor Driven

Beaudry & Co., Inc.

141 Milk St., Boston, Mass.

SALES AGENTS—The Machine Tool Engineering Co., Inc., New York City; Brown & Zortman Machinery Co., Pittsburgh, Pa.; W. M. Pattison Supply Co., Cleveland, O.; Eccles & Smith Co., San Francisco and Los Angeles, California; Hallidie Mch. Co., Inc., Seattle, Wash.; The Portland Mch. Co., Portland, Ore.; Alfred Herbert, Ltd., Coventry, Eng.; London, Paris, Calcutta, Yokohama; Sherritt & Stoer Co., Philadelphia, Pa.; The English Tool & Supply Co., Kansas City, Mo.; The E. L. Essley Mch. Co., Chicago, Ill. and Milwaukee, Wis.



It's Portable

RESOLVE!

To Have a

Barr Pneumatic Hammer

In Your Shop or Tool Room

We know you need it!

We know it will prove one of the most profitably adaptable savers of time and money you ever bought.

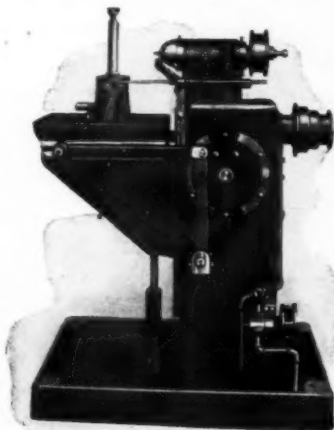
If necessary cut something else off your list rather than omit this winner.

Write for Bulletin 10H.



Guaranteed To Round 24 Teeth Per Minute

And Every Tooth a Perfect Half-Circle



THE CROSS Gear Tooth Rounder shapes the ends of sliding meshing gears in the only way that they ever ought to be allowed to go out of the shop—in a perfect half-circle from tip to root.

And as they are guaranteed to round 24 teeth per minute, any pitch $\frac{1}{2}$ or finer, they insure quantity as well as quality production, upon a very low-cost basis.

Cross Gear & Engine Company
Detroit, Michigan

Patented here and abroad; sold ONLY by us

"All You Claim and More"
That is What a Customer Says



**About The
 "Handiest Racks"**

No wonder! Note how neatly and compactly they store pipe, shafting, bars; how easy they make it to sort, count or handle stock; how they save in space, in time and in waste; how they tidy up the place and make it look ship-shape and business like.

They cost so little and are worth so much that we almost feel like philanthropists in passing so good a thing along.

Let's Connect Up

Wm. S. Yohe Supply Co.
 503 Mahoning Road, N. E., Canton, Ohio

Support Long Stock With



LOWAY

Adjustable Stock Support

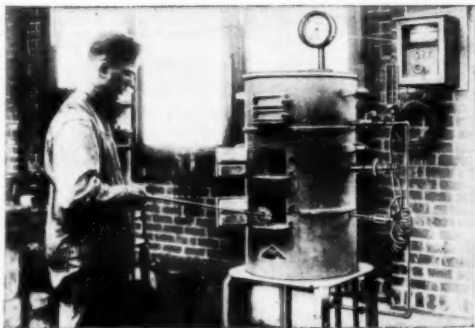
You will find it convenient, effective and a real economy. It is adapted to any machine which must be fed with long stock. Easy adjustability in height makes it a simple matter to shift the support from one machine to another, or to support any overhang. A time-saving convenience that will appeal to the man who realizes the value of minutes. We make them in two styles.

It will pay for itself over and over again.

A. F. WAY CO., Inc., - Hartford, Conn.

The "Triad" Heat Treating Furnace

Combines three furnaces in one unit
Saves space, time and operating cost
Better results—no pitting or scaling



Three compartments in one unit, instead of separate furnaces, permit the different operations of pre-heating, high-heating and drawing the temper to be performed with only one oil or gas burner.

The "Triad" is cylindrical in form, without cold corners, and so well insulated that it heats quickly to desired temperatures.

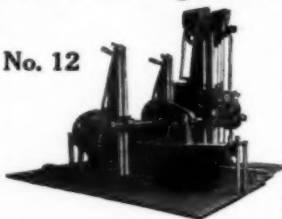
It takes but little room, costs less to install, saves about two-thirds in cost of fuel, and removes the danger of pitting or scaling from exposure to free air between separate furnaces.

Write for details; glad to furnish them

THE W. R. BENNETT CO., Elmwood, Conn.

P. & H. Drilling and Boring Machine

No. 12



1. Rapid traverse in each direction can readily be manipulated by slight adjustments on the hand wheel.

2. The spindle speeds are obtained by quick change gears and variable speed motor for either A. C. or D. C. current resulting in the following speed variations:

A. C. Current, 12 to 542 R. P. M.

D. C. Current, 10 to 445 R. P. M.

3. The four changes of feed available for each speed are made by the operator without leaving his position near front end of spindle.

Pawling & Harnischfeger Company

Milwaukee, Wisconsin

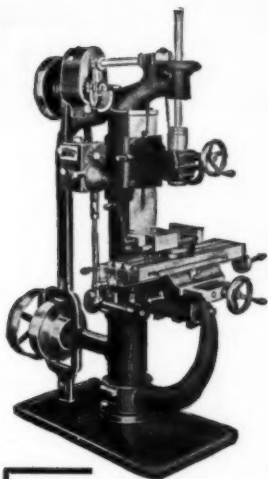
Broaching Machines And Broaching Tools



Our Famous Double Machine

The Most Complete Line In The World. We make our machines in 5 sizes and 11 types. *Send for particulars.*

THE J. N. LAPOINTE CO., - - New London, Conn.



**Mills,
Bores
and
Drills
at any
Angle**

“A better machine—that’s all”

The superiority of the Knight Milling and Drilling Machine is neither a myth nor a mystery. It's a solid fact, based on past performance in hundreds of shops, where their many conveniences and great ease of operation enable them to save time and increase production.

The war is over, but there's important work ahead. Our machines reduce shop costs on dies, tools, slotting work and hard machining of every kind. Made in three sizes—large, medium and small.

Let us mail the interesting details

W. B. Knight Machinery Co.
3920 W. Pine St., St. Louis, Mo.

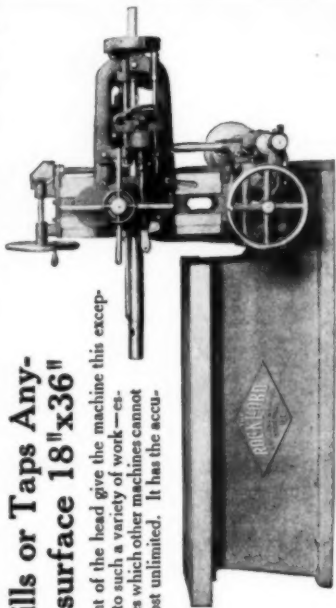
A Machine That Is Out Of The Ordinary

**It Bores, Drills or Taps Any-
where on a surface 18"x36"**

The lateral and vertical adjustment of the head give the machine this exceptionally wide range, and adapt it to such a variety of work—especially large, irregular shaped pieces which other machines cannot handle—that its usefulness is almost unlimited. It has the accu-

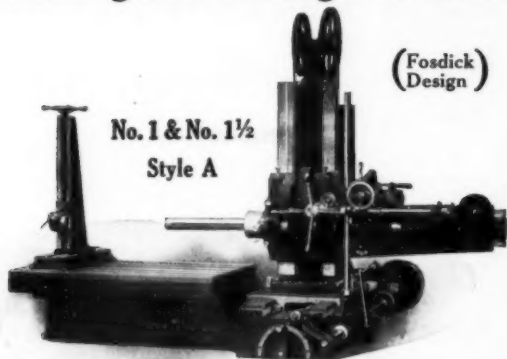
racy required for the finest tool and jig work, and at the same time the power and capacity for 2" drills, and for boring to 6" or even more. It is quick and economical on a lot of work that by other methods you can do only slowly and expensively.

May we send you a folder?



THE ROCKFORD DRILLING MACHINE CO., Rockford, Illinois

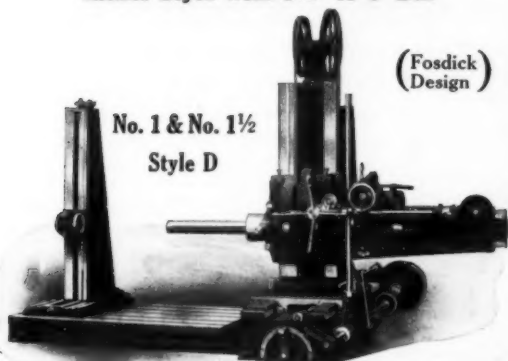
G. & L. Horizontal Boring Drilling and Milling Machines



**No. 1 & No. 1½
Style A**

**(Fosdick
Design)**

Either Style with 3½" or 4" Bar



**No. 1 & No. 1½
Style D**

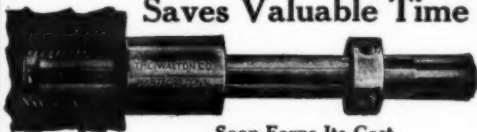
**(Fosdick
Design)**

Write for Full Details and Catalog

Giddings & Lewis Mfg. Co., Fond du Lac, Wis.

Walton Tap Extractor

Saves Valuable Time



Soon Earns Its Cost

When a tap breaks—and about 90% do break—your high priced machinist gets busy "saving the pieces." This slow job consumes a lot of valuable time, unless he uses a Walton Tap Extractor.

This handy device has four crucible steel prongs or fingers which fit into the flutes, making it easy to remove the tap without injury to the threads.

A worth-while economy—send for free trial

THE WALTON CO., Hartford, Conn.

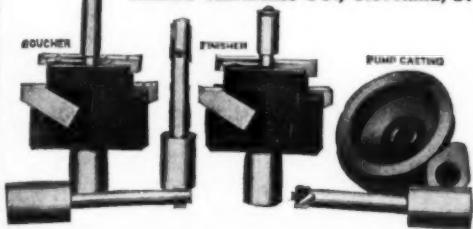
Kelly Production Tools

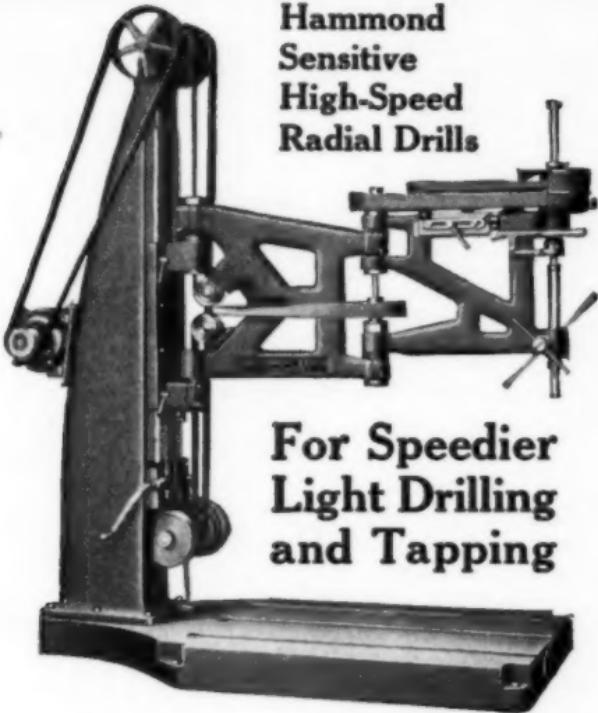
Increased the Output Over 100 Per Cent. No Scrap.

Multiple Tools and Reamers from 1" to 12"

Catalog J-5 on Request

KELLY REAMER CO., Cleveland, O.





**Hammond
Sensitive
High-Speed
Radial Drills**

**For Speedier
Light Drilling
and Tapping**

Especially built for light drilling and tapping work. A single motion brings the drill over any part of the work. Great range of adjustment. Drill radius 48 inches.

Entirely self-contained—just "hitch" to belt or motor. Three spindle speeds—380, 625, 1000 r. p. m. Can be arranged to give spindle speeds up to 2000 r. p. m. Standard Wall type (without base) can be supplied.

*Write and find out how you can cut your
light drilling and tapping costs 25% to 33%*

The Hammond Mfg. Co.
Cleveland, Ohio, U. S. A.

Bench Drills

with 1 to 4 Spindles
 $\frac{1}{2}$ " Capacity.

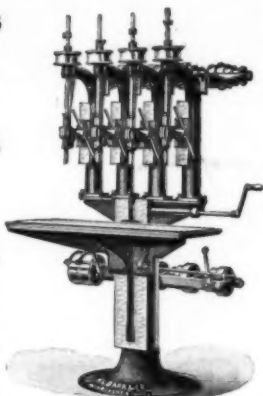
Floor Drills

1 to 7 Spindles
 $\frac{1}{2}$ " to $\frac{3}{4}$ " Capacity.

Power feed on as many
spindles as you want.

Francis Reed Co.

43 Hammond St.,
WORCESTER, MASS.



Demco No. 30 Bench Drilling Machine

Spindle speeds to 12,000 r. p. m.
Norma ball bearings throughout.

The arrangement of adjustable
quill bracket insures perfect align-
ment of spindle in all positions.

Belt adjuster and *automatic belt
stretch compensator*—an exclusive
Demco feature—keep the shock off
all bearings, practically eliminate vi-
bration, insure smooth running and
add to life of machine.

*Also made in floor type,
with one to four spindles*

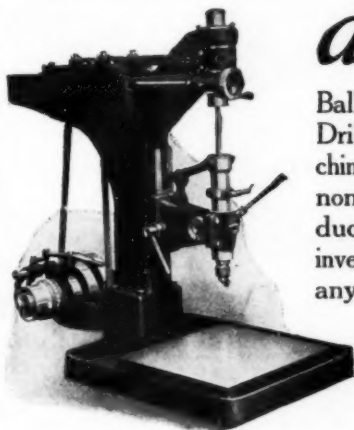


The Demco Machine Tool Co.

Successors to The DeMooy Machine Co.
706 Frankfort St., N. W. Cleveland, Ohio

Economical Drilling

Wide range, convenient controls, low power consumption, capacity for high speeds and rigid quality construction make the



Avey

Ball Bearing Drilling Machine an economical producer; a good investment in any shop.

Details are well worth investigating.

Write today

The Cincinnati Pulley Machinery Co.
Cincinnati, Ohio

Sellew Adjustable Drill Heads



These handy, dependable, highly efficient devices are saving time and money for others, by drilling three holes at once. Why not for you?

We will make special heads to fit your work.

Ask us



Sellew Machine Tool Company
Pawtucket, R. I.



"Buhr" Drill Heads

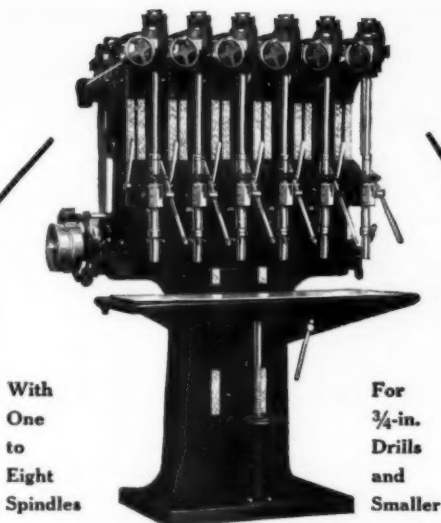
**Adjustable and Fixed Center
All-Ball-Bearing**

Adjustable from 2 to 12 spindles.

Fixed center, any number of spindles.

We guarantee our Heads to stand up to capacity.

Nelson-Blanck Mfg. Company
Detroit, Mich.



With
One
to
Eight
Spindles

For
 $\frac{3}{4}$ -in.
Drills
and
Smaller

H. & W. Drilling Machines

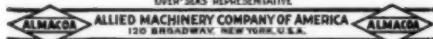
Have Revolutionized Sensitive Drilling

They have a number of patented and other improvements for expediting work. Of these, one alone—that of a gearless power transmission with frictionless bearings—has fairly revolutionized sensitive drilling. It is under perfect control and delivers the most power to the point that drills the holes.

Handsome Catalog, with Special Feed and Speed Chart, free

The Henry & Wright Mfg. Co.
760 Windsor St., Hartford, Conn.

OVER-SEAS REPRESENTATIVE



Principal Foreign Offices: Paris, Turin, Zurich, Barcelona



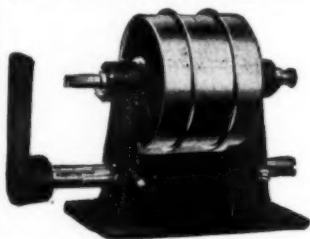
Burke Quality Excels on Fine Points

Machines of
Burke Quality
are never built
with any name
cast on the
frame but our
own—

**BURKE
CONNEAUT
U. S. A.**

For Sale Everywhere

This Tapping Machine Now Has Greater Capacity

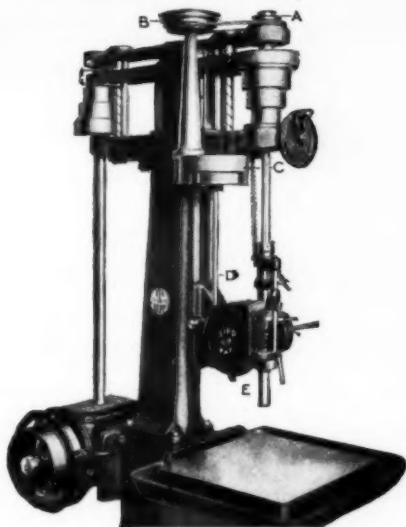


**Burke's
No. "D" Taps
5/8" Holes
in
Horseshoe
Steel**

BUILT throughout with exceptional care, our several sizes give service in proportion. Accurate, rapid and convenient, they give solid satisfaction. No. "D" sells for \$50.

Send for details today

The Burke Machine Tool Co., Conneaut, Ohio



A Money Saver

**The Power Feed of the
Sipp Drill is Unique**

It is a money-saver because it eliminates waste time. One down pull till the drill touches the work—that's all, but it makes the Sipp Power Feed the most efficient yet devised.

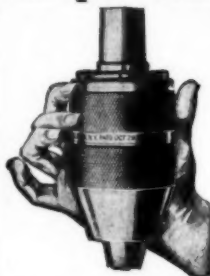
Write for details

The Sipp Machine Co.

Keen St., Paterson, N. J.



Eclipse Self - Tightening Drill Chuck



Roller bearing.

Quickest and easiest grip, and it never slips.

Self-tightening. No keys or wrenches.

It has no rival in its combination of quick and firm gripping, easy release, simplicity and accuracy.

Saves time and money on high speed drills.

You need it now. Why wait?

Nielsen-Barton Chuck Co., 106 S. Jefferson St.
CHICAGO, ILL.

Also makers of ARBORS for all kinds of Chucks

YOUNG, CORLEY & DOLAN, Inc., 115 Broadway, NEW YORK CITY
New York District Agents

Woodstock Improved Safety Tapping Chuck

Eliminates Tap Breakage

Utilizes 95 per cent of the strength of tap, and automatically releases when it binds or touches bottom.

Giving excellent results in tapping tough metals, blind tapping, bottom tapping and tapping in shallow holes where a stop on machine is worthless. Works to full length of tap or where threads are only one or two deep.

Made in five sizes. Uses standard hand and machine taps.

How about a trial order?

Peter Bros. Mfg. Co.
115 Railroad St., Algonquin, Ill.





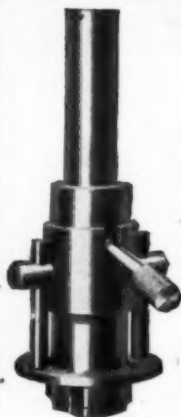
Silver 20" Upright Drill

YOU NEED maximum production—which is a Silver specialty—in order to obtain lowest shop costs. You can crowd this machine all you wish, its accuracy will not be impaired. It is the ripe product of 65 years' experience.

Your choice of plain lever feed, lever and wheel feed, power feed and automatic stop, or with back gearing—each with either round or square base. Also furnished in 2, 3 or 4-spindle gangs.

Specifications of our 20" and 25" Drills gladly sent on request

The Silver Mfg. Co. 295 Broadway, Salem, Ohio



Save 50% to 75% In the Cost of Tapping

MURCHEY Patent Automatic Collapsing Taps do any kind of tapping that can be done with solid taps, with greater safety to the work, and at a saving in cost of from 50 to 75 per cent. They also outlast several solid taps.

They save the time of backing out, which takes as long as the threading, and remove all danger of stripping or injuring the threads.

No losing size with the Murchey. Simply re-sharpen chasers and re-adjust tap. Chasers may be used until ground almost entirely down.

Write for full information concerning Murchey Collapsing Taps and Self-Opening Dies. You will be glad to know about them.

Murchey Machine & Tool Co.
58 Porter Street, Detroit, Mich.

From Rack To Job

That's all there is to it when Nicholson Expanding Mandrels are used.

No hunting through a pile of solid Mandrels. One set of nine "Nicholsons" afford an instant fit for any round or square hole from 1" to 7".

Increased production simply has to follow, with greater accuracy. "Nicholsons" cannot distort—the jaws are always concentric.

Write for full information. 30-day free trial with no obligations.

W. H. NICHOLSON & CO.
117 Oregon St., Wilkes-Barre, Pa.

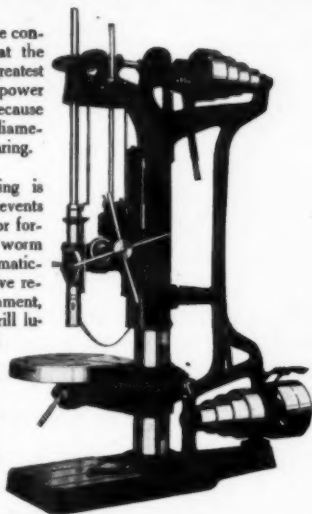
NICHOLSON
EXPANDING MANDRELS



The "Aurora" Has The Pull

Users everywhere confirm our claim that the "Aurora" has the greatest pulling capacity or power at the drill point, because of the large pulley diameter and ratio of gearing.

The table bearing is extra large, which prevents tilting if the operator forgets to clamp it; worm wheel drops automatically, giving a positive release; tapping attachment, compound table, drill lubricating outfit and motor drive if desired. Built in quantities under a low factory expense to sell at a moderate price for quality.



Sizes 21" to 36"

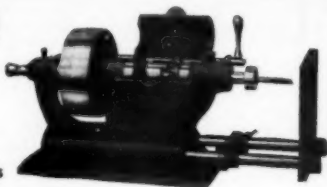
DRILLING TESTS OF 24" AND 26" DRILL

Size of Hole	Spindle Speed	Feed per Minute	MATERIAL
1"	360	9½"	Cast Iron
1"	360	6½"	Mild Steel
1½"	350	6½"	Mild Steel
1½"	350	9"	Cast Iron
1½"	225	5½"	Mild Steel
2"	225	6½"	Cast Iron

The Aurora Tool Works
Aurora, Indiana, U. S. A.

Workwell Tapping Machine

Built for Service
Has Many Fine Points



2 bar slide to hold work straight with tap.

Steel gears 2" diameter, enclosed and running in oil.

Extra large hardened clutch. One loose pulley with hardened clutch. Non-slip tap holders. Die holder for threading outside threads. Stop adjustment for any depth of thread.

MADE IN TWO SIZES.

Type B 2 for threads to $\frac{1}{4}$ " diameter Type C 2 for threads to $\frac{1}{2}$ " diameter

Give it a trial. Manufactured by

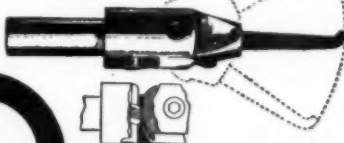
Workwell Engineering & Mfg. Co.

Dept. 2

616-620 W. Monroe St., Chicago, Ill.

E-Z Set Boring Tools

Use one and you will
order
others



Milling Machine Spacing Washers and Collars, cheaper than you can make them. .003, .004, .005, .006, $\frac{1}{16}$ " and $\frac{1}{8}$ " thick made of steel. $\frac{1}{2}$ ", 1", 2" and 3" thick or long made of cast iron.

If your dealer cannot supply you write us

The Unity Manufacturing Co.

4227 Lorain Ave., Cleveland, O.

Canedy-Otto Power Drills

New and Improved 20" Models

We take a good deal of pride in our 20" drills. They are simple in design, rugged in construction, and smooth, noiseless and rapid in operation, with perfect accuracy for drilling holes up to 1½-inch. They have all the graduated and automatic features found in high-priced drills.

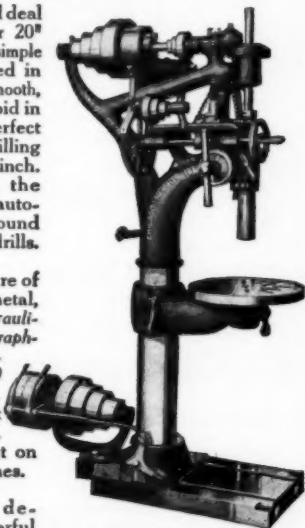
The bearings are of the best babbitt metal, with *Randall hydraulically pressed sheet graphite cones*, which increase their life 300 to 400 per cent. The upper shaft has split bearings. All gears are cut on automatic machines.

Equipped, if desired, with a powerful direct-connected motor, with all-spur-gear drive; also with an improved tapping attachment of very few parts, which is accurate, powerful and rapid—operated by the foot, leaving hands free to handle work.

The price is right, too. Write for complete data.

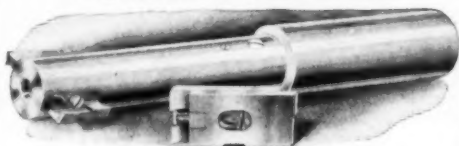
Canedy-Otto Mfg. Company
Chicago Heights, Ill.

Manufacturers of Forges, Blowers, Drills, Lathes and Grinders



Ream Holes of Any Size

Adjustable to .00025 Inch



Madison Adjustable Boring Cutters and Bars

Rapidly replacing reamers on automatic machines, turret lathes, boring mills, etc., because they make accurate, uniform holes of any size. No grinding necessary for proper accuracy on holes of odd sizes. A great convenience and big time saver. Used by U. S. Government and large motor concerns.

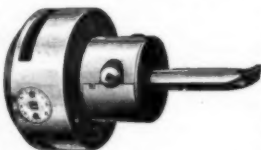
You should have description and price list

MADISON MANUFACTURING CO., - Muskegon, Mich.

SELLING AGENTS: Thomas Crowther, Room 24, 19 Pearl St., Boston, Mass.
Firmhil Machine & Supply Co., 602 Kerr Bldg., Detroit, Mich.

This Method Saves Money

Bore with Milling Machine or Turret Lathe



The Casler Offset Boring Head is easily and quickly attached to milling, boring and screw machines, drill presses and turret lathes. It is a compact tool for boring and counterboring holes to size, and is unequalled for enlarging and recessing holes.

The "Casler" has no projecting corners to catch the work, and is perfectly rigid. For boring holes to size in jigs, tools, fixtures, or any irregular shaped pieces it is in a class by itself.

*Our Catalog contains many illustrations
that practical mechanics appreciate*

MARVIN & CASLER CO., Canastota, N. Y.

"Reconstruction"

The greatest problem of the American manufacturer today is to so increase his output and reduce his production cost that he is thereby enabled to keep his plant fully at work, regardless of external conditions.



solve this problem wherever rapid machining or reaming is required.

Let us tell you about
McCrosky Wizard Chucks and Collets
for the drill press

McCrosky Turrets
for your old engine lathes

McCrosky Adjustable Reamers
for every reamer operation.

Fully described in Catalog No. 6
"A text book on modern machine-shop methods"

McCrosky Tool Corporation
Meadville, Pennsylvania, U. S. A.

Machine Designing

We design machines for special purposes, develop an idea along correct mechanical lines, improve defective designs, often making a success out of a failure. Yankee ingenuity, mechanical expertness and the "knack" which comes from long experience have enabled us successfully to deal with some knotty mechanical problems. If you have one, take it up with us; our engineers will be glad to advise you.

We have a splendidly equipped shop for putting ideas into metal; can make tools and jigs for you if you wish, and guarantee the work.

A letter may start something to your advantage; will you write it?

Southworth Machine Company
Portland, Maine



The Friction Drive **FENN Tapping Machine**

Saves Its Cost in Taps

The sensitive, variable speed drive not only gives the proper speed for tapping, ranging from 225 to 600 r. p. m., but eliminates entirely the strain on spindle and taps, avoiding all breakage and the loss in taps and time which this occasions. The result is more work done at less expense.

Capacity up to 3-16-Inch
Also made in bench type

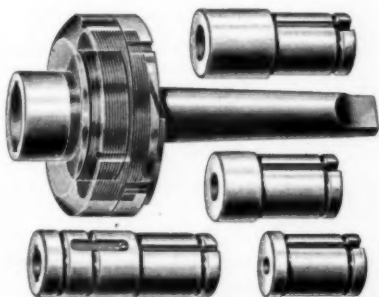
Full details gladly mailed

Fenn Manufacturing Company
Hartford, Conn.

Cable Address "Fenn" Western Union Code
W. L. Fenn W. A. Fenn

The Safety Drill and Tap Holder

Saves Time and Money



Made in Four Sizes, Covering 0 to 2½ in. Diameter

The change is made from drill to tap, and vice versa, without stopping the spindle.

It permits tapping to the bottom. It also prevents tap breakage, because driven by friction, and when the tap is subjected to any undue strain, it stops before reaching the breaking point, while the spindle revolves.

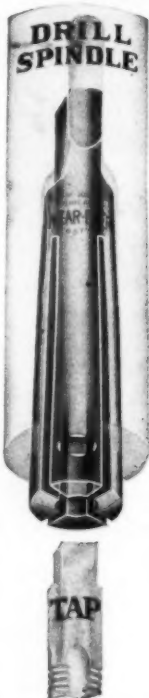
The Beaman & Smith Safety Drill and Tap Holder is the only device for the purpose which has given universal satisfaction. It is simple, efficient, convenient, rapid and accurate, and there is nothing about it to break or get out of order.

Write for description of this handy attachment

The Beaman & Smith Co.
Providence, Rhode Island

"Wear-Ever" Tap Chucks

Are SUPERIOR in EVERY WAY



They save time, because they adjust automatically—no screw adjustments—no time lost in setting for various size taps.

They reduce tap breakage 90 per cent, because they always drive the tap true, regardless of variation in sizes of shanks.

They are the simplest—made of one piece and hardened. There is nothing to slip, wear, break or fail.

They outlast several friction tap chucks, and are sold at a low price.

Thousands of users everywhere attest their unvarying quality.

Try them—that's all

You will like them, because they save time, taps and money. Your operators will like them, because they are so simple and easy to use.

How about a trial set?

We are ready—are you?

Scully-Jones & Company

Suite 555 Railway Exchange Bldg.,

Chicago, Ill.

Drilling Machines

For Bench Use

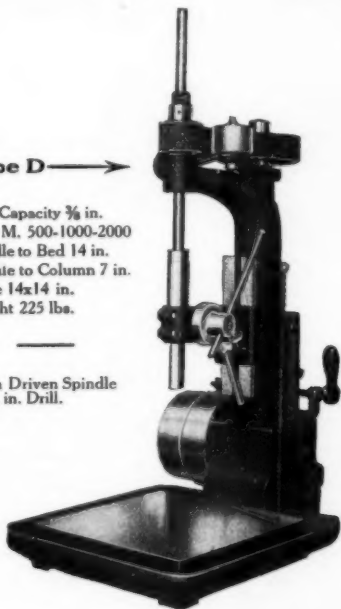
Hand and Power Feed

Gear Driven

Type D →

Drill Capacity $\frac{3}{8}$ in.
R. P. M. 500-1000-2000
Spindle to Bed 14 in.
Spindle to Column 7 in.
Table 14x14 in.
Weight 225 lbs.

Chain Driven Spindle
for $\frac{1}{4}$ in. Drill.



The Taylor & Fenn Co.
Hartford, Conn.



Blueprints

The Wickes

Continuous Electric.
Sells at **half** the
price. Uses **half**
the **current**
of others.
Perfect prints
up to 48" in
width and of
unlimited
length.

Wickes Bros., Water St.,
Saginaw, Mich.

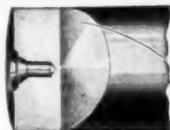


Electric Blue Printing Machines

Write for Catalogue B-3

Buckeye Engine Co.
Salem, Ohio

The "Apex" Combined Center Drill And Countersink



- It saves much time.
- It insures uniform centers.
- It eliminates guesswork.
- It reduces breakage to a minimum.
- It improves the appearance of the work.

Ask Your Lathe Operators

They will like it because the added countersink allows of facing work clear to the center without the use of half centers or the somewhat delicate operation of partially withdrawing the tailstock spindle.

They will like it because it permits either or both ends of the work being faced before, after or between turning or other operations, as facing has no effect on the real center, which is the inner countersunk portion. This eliminates several handlings of the work and changing of tools and dogs.

The "Apex" allows a depth of center which is theoretically correct before the countersink operates, eliminating guesswork and insuring uniform centers.

*A small tool of big economy and low cost
May we mail the description and quote?*

The Apex Drill Company

2455 W. McMicken Ave.,

Cincinnati, Ohio

Pattern Shop Machinery

Special Prices if you refer to this ad.



Band Saws

Chicago No. 00 27 in. Wheels
 " No. 0 32 " "
 " No. 1 36 " "



Saw Tables

Chicago No. 5 Stationary Table
 " No. 9 Tilting Table
 " No. 10

Boring attachment if wanted.



Jointers

8 in., 5 and 6 ft. tables and guard.
 12, 16, 20, 24 and 30 in., 7 ft. tables
 and guard.

Trimmers, Lathes, Core Box Tools, etc.

Ask for full descriptions

Chicago Machinery Exchange

1211-1227 Washington Boulevard, Chicago

A Place For Everything

Pays Good Dividends—Always

A Modern Bench

Solidly built, well finished, easy to clean, with a 5-inch guard around three sides of the top, six drawers, one blueprint slide, a shelf, and three large compartments for stock—a place for everything and everything in its place.



Installed in numbers by leading manufacturers to increase the efficiency of their tool makers and bench hands. It is a wonderful help. *Write for full particulars.*

THE RITCHIE-WERTZ CO., Dayton, Ohio

Thor Universal Electric Drills

Licensed Under Burke Universal Motor Patent

Indispensable for all kinds of drilling, reaming and wood boring in the building of automobiles, steel and wood cars, boilers, auto bodies, and in railroad and structural shops, ship and dry dock work and machinery repairs. Can be operated on alternating or direct current, 110 to 250 volts. Furnished with cord and suitable feed attachment ready for immediate use. Attach to any lamp socket.



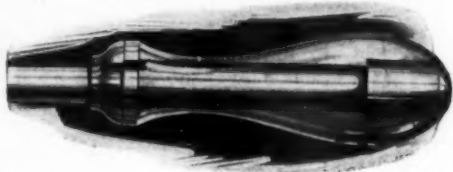
000	Drilling Capacity	1.4"
00	"	5.16"
0	"	3.8"
01	"	1.2"
1	"	9.16"

No. 6 Electric Grinder.

Jacobs Chucks used as regular equipment.

Independent Pneumatic Tool Company

Chicago	New York	Pittsburgh	Cleveland
Detroit	San Francisco	Birmingham	Montreal



Quick Action

This is what we call this new Machine Handle. Attached to any power tool, especially the heavier types; adjustments are made with more speed and less effort.

All kinds of standard and special Handles from steel for power tools and similar purposes.

Send for Catalogue and prices.

The Cincinnati Ball Crank Co.
Oakley, Cincinnati, Ohio



Style "C"



The Hinge



Style "Y"



Style "B"



Style "G"



Style "O"



Style "L"



Style "T"

GITS OIL CUPS

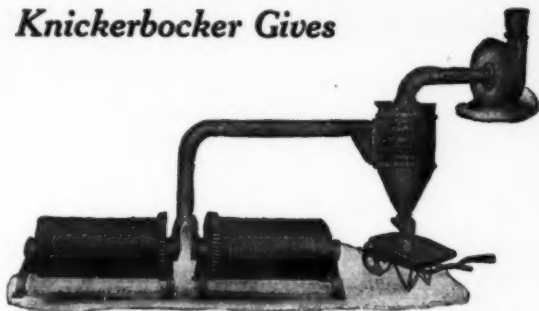
Give perfect satisfaction where others fail. State style and size in which you are interested, and we will send free samples and catalog.

GITS BROS. MFG. CO.
1940 SO. KILBOURN AVE., CHICAGO



Style "H"

Knickerbocker Gives



The Reasons Why

So Many "Rarefieds" Are In Use

Because they are more efficient

Because they are longer lived

Because their cost is moderate

Because they cost less for upkeep and repairs

Solvay Process Co. now uses.....	26
Westinghouse Electric & Mfg. Co. now uses.....	21
Weston-Mott Co. now uses.....	12
Willis-Overland Co. now uses.....	10

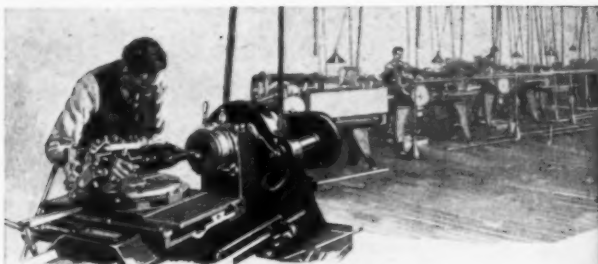
And there are many others.



The "Rarefied" Dust Collector operates on the "rarefied" or partial vacuum principle. Expert engineers have ordered their installation after exhaustive tests. They are successful with the most difficult dust.

Send for our explanatory Booklet

The Knickerbocker Co.
Jackson, Mich.



GRINDING chuck pads true with the spindle of the screw machine is a positive, easy method of obtaining accuracy when you have a **DUMORE**. War-time production has told heavily upon machines and tools—your own shop verifies this—and the change back to a peace basis demands a start with efficient equipment.

Your products are always as good as your tools—never better. And the accuracy of your jigs, dies and gages depends upon your facilities for grinding them. Close limits can be obtained only from a grinder having both **speed** and **balance**. That's why the **DUMORE** carries a dynamically balanced armature and operates at speeds ranging from 10,000 to 50 000 R. P. M. Chatter-marks, taper and bell-mouth are positively eliminated.

Now is the right time to put your tools in shape. Let your dealer demonstrate right in your own shop what a **DUMORE** grinder will do for you.

WISCONSIN ELECTRIC CO.

4309 16th St.

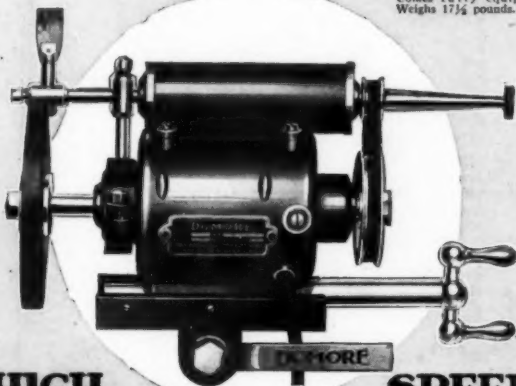
Racine, Wis.

DUMORE

Correcting Inaccuracies of New and Used Tools

EQUIPMENT A

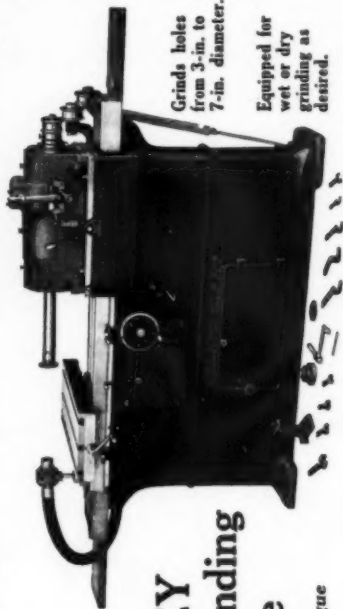
For general tool room use.
Includes High Speed In-
ternal Spindle A with reach
of 3 inches. 30,000 R.P.M.
Comes fully equipped.
Weighs 17½ pounds.



**HIGH SPEED
GRINDERS**

Better Compression—Less Leakage

by finishing
Aeroplane and
Automobile
Engine Cylinders
on a



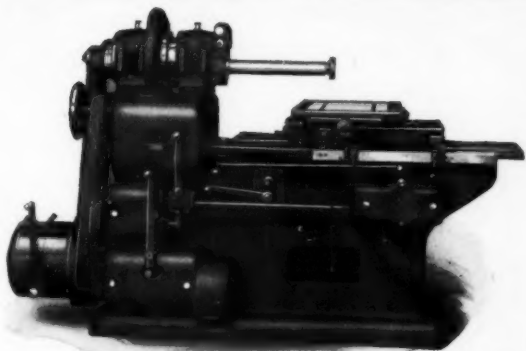
WHITNEY Cylinder Grinding Machine

Write for Catalogue

Grinds holes
from 3-in. to
7-in. diameter.

Equipped for
wet or dry
grinding as
desired.

BAXTER D. WHITNEY & SON, Winchendon, Mass., U. S. A.



The New Heald No. 65 Cylinder Grinding Machine

This is a production machine carried to the highest degree of development, and is therefore of vital interest to manufacturers.

All control levers are in a very small radius, as can be readily seen.

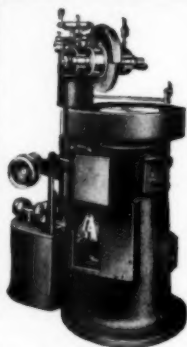
Note also that the Dog Bar is attached to the Intermediate Plate, giving a feature never before used. The relation between the dogs, the work, and the wheel always remains the same when a vertical adjustment is made.

The frame is cast solid, giving great rigidity and stability.

QUICK DELIVERIES CAN BE MADE

Write us for further information

The Heald Machine Company
Works: Worcester, Mass., U. S. A.



Swivel back for flat
and curved surfaces

12-Inch Bristol Precision Rotary Surface Grinder

Solid back for flat
surfaces only

Let us tell you about a machine that is good all through; if it fits your work, you'll be glad you found it.

Your address?

Bristol Machine Tool Co., Bristol, Conn.
Successors to The C. G. Garrigus Machine Co.

**GREATER SPEED
HEAVIER CUTS**

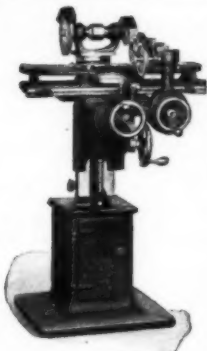
Possible on the



**UNIVERSAL TOOL
GRINDER**

through the use of ball bearings in the wheel spindle.

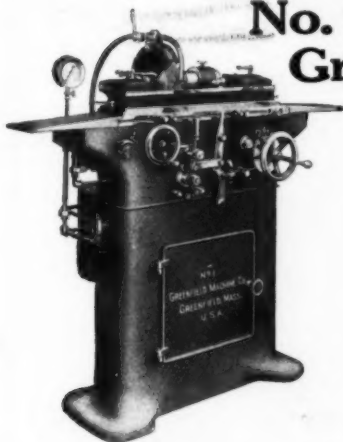
Write for catalog illustrating and describing the other superiorities of the STERLING GRINDER



McDONOUGH MFG. COMPANY, Machine Tool
Eau Claire, Wisconsin Department

The Greenfield

No. 1 Plain Grinder



**Takes
13½ inches
between
centers**

**Swings
5 inches**

Grind your small cylindrical parts.

You can finish accurately by grinding cheaper than any other way.

The Greenfield No. 1 is particularly desirable for those who do not care to pay the price of the larger machines, saving several hundred dollars in cost without loss in quantity or quality of production.

A simple and effective hydraulic table feed gives two to three times as rapid cuts as larger grinders permit, making up in speed for its lighter cuts.

Better have the details

**Greenfield Machine Company
Greenfield, Mass., U. S. A.**

W & M No. 1

Surface Grinder



No. 1 Hand Feed Surface Grinder without the Drill Grinding Attachment

High grade ball bearings and accurate design makes rapidity and accuracy certain when this Grinder is installed.

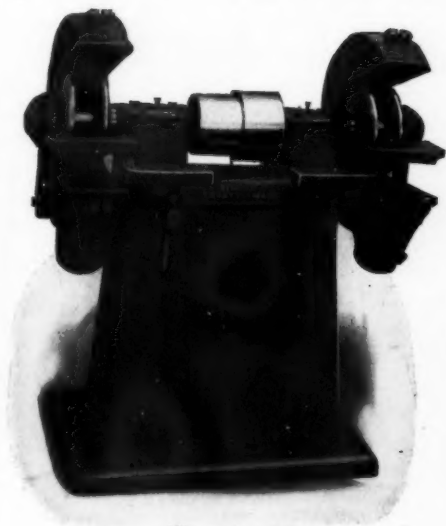
Circular on request

Wilmarth & Morman Co.

Master Grinder Makers

1185 Monroe Ave., N. W., Grand Rapids, Mich., U. S. A.

Grind it *on a* **"Blount"**



No. 6½

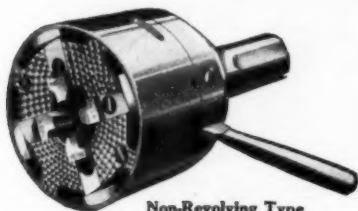
Our eight sizes meet all requirements of general grinding work. The large bearings insure accurate work under continuous heavy load.

J. G. BLOUNT CO., Everett, Mass.



There's a copy
of this new book waiting for you—
Just say "Die & Tap Catalog"

NAMCO SELF-OPENING DIES



Non-Revolving Type

Take One Apart

and you will see at once

- what few parts there are in a Namco Self-opening Die;
- what simple design;
- what careful workmanship;
- what convenience of adjustment.

Every Namco Die is **built**, not just assembled. This means accurate production and long usage.

Made in Revolving and Non-revolving types "for every threading requirement."

THE NATIONAL ACME COMPANY

NEW ENGLAND PLANT
WINDSOR, VT.

Cleveland, Ohio

CANADIAN SCREW PLANT
MONTREAL, P. Q.

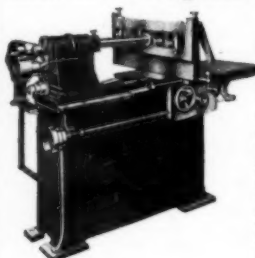
Branch Offices:

NEW YORK BOSTON CHICAGO DETROIT ATLANTA SAN FRANCISCO
WAREHOUSES—NEW YORK, CHICAGO With FOREIGN REPRESENTATIVES

Makers of Gridley Single and Multiple Spindle Automatics at Windsor, Vt., and Acme Automatics, Threading Dies and Screw Machine Products at Cleveland, Ohio



Regrinding of tractor, truck and auto engines is its specialty



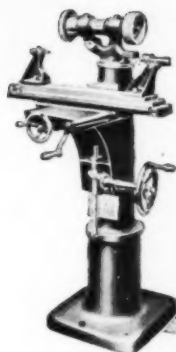
The Schmidt Internal Grinder

is a thoroughly dependable machine that works rapidly and accurately.

The ball-bearing rocker arm countershaft and rear bearing of emery wheel arbor, with other improvements in design and construction enable you to achieve minimum production costs.

A high grade cost reducer. Immediate delivery.

B. L. Schmidt Co., Dept. A 8, Davenport, Ia.



New

"Wells" Universal Cutter Grinder No. 190

A Quality Tool



In common with the G. T. D. policy of modernity, the "Wells" Universal Tool Grinder has been redesigned and brought strictly up-to-date. Rigid inspections of raw materials and finished product assure the uniformly perfect quality of each & every machine.

Your tool room equipment is not complete without one.

A trial convinces
Machine Tool Division

Greenfield Tap and Die Corporation

**Greenfield,
Massachusetts,
U. S. A.**



Grand Rapids No. 1

Universal Cutter, Reamer
and Tool Grinder



Simple in Design
Efficient in Service
Accurate in Workmanship
Economical in Cost

Ask for bulletin giving full particulars

Grand Rapids Grinding Machine Co.

17 Ottawa Ave., N. W.
Grand Rapids, Michigan, U. S. A.



Improved Wet Tool Grinder

Deliveries From Stock

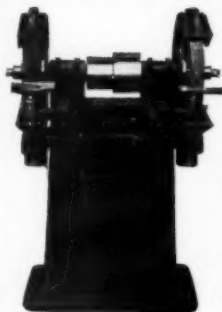
Water supply always under positive control.

No pumps, belts or weights and troubles incident to same. Let us send you Bulletin No. 5, giving complete specifications of the best designed, simplest and most efficient Water Tool Grinder on the market. Can also furnish Wheel-Truing device for above.

Bulletins Nos. 5 and 33

The Webster & Perks Tool Co.
Box 1340 Springfield, Ohio, U. S. A.

Build Insures Durability



Imperial Wick Oiling Grinders

are correct in design and solid in construction—built to give long, dependable service.

Equipped with large, babbitted, wick oiling bearings, lined with sheet graphite, heavy spindles, and flanges are one-half diameter of maximum wheel size.

Our new vibration proof box Bed Column, shown in cut, is regularly furnished on our 16" and 18" machines. Write for particulars and prices.

CLIZBE BROS. MFG. CO., Plymouth, Ind.

Massive and Rigid—

The Manhattan Runs Without Vibration



Every component part of this modern machine has been carefully considered and tested, and the result is a remarkably efficient and precise surface grinder.

Dials on both feeds are graduated to thousandths, of which fractions may be obtained for extreme accuracy. The construction of spindle, with over-size phosphor bronze bearings, give unusual capacity for heavy cuts. Table is surface ground with its own wheel. *Send for full details.*

Manhattan Machine & Tool Works
Dept. A., Grand Rapids, Mich.

Thompson Universal Grinder Reduces Sharpening Costs

Of All Forms of Cutters and Reamers

HOW?

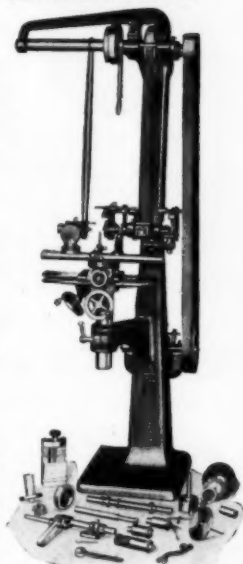
Its many refinements of design and construction enable your men to do accurate grinding in less time than needed heretofore.

Sharp Cutters

are an economy in many ways, and a machine that facilitates sharpening as does the "Thompson," helps to keep all tools sharp all the time.

Wide Range

It does circular, internal and surface grinding on cutters, reamers, counterbores, drill bushings, arbors, small machine parts, etc. Tool grinding is done on one side and cutter sharpening on the other side without interference.



Self-contained — Jack shaft drive
Also made for motor drive

A profusely illustrated folder gives many practical hints and full details of the many time-saving conveniences

The Thompson Grinder Co.
Springfield, Ohio

Patented Jan. 30, 1917



Automatic Extension Reel

Makes Extension Lights Safe

No wires laying around in the way—no lamps broken—no insulation ragged out—no short circuits.

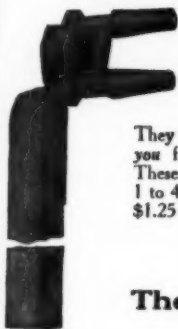
This handy little reel is only 9 inches in diameter and 2 inches wide. Holds 25 ft. of reinforced cord. Turns on a swivel. Can be locked or released automatically with a movement of the hand. Eliminates fire risk—cuts insurance cost. Approved by the Underwriters.

Write for catalog.

The Cincinnati Specialty Mfg. Co., Inc.
Manufacturers,
1913-21 Powers St., Cincinnati, Ohio

Regrets Come Too Late!

Save Your Men or Women from Injury



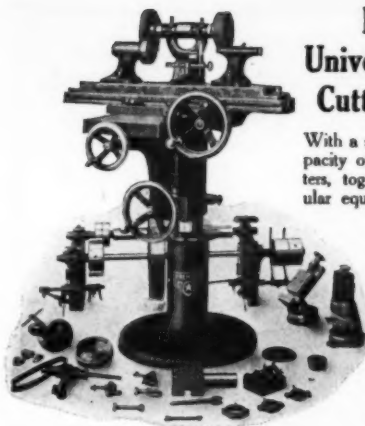
PUTTING BELTS on moving pulleys is very likely to result in serious injuries unless your employees are supplied with

"Safety First" Belt Sticks

They prevent accidents and also safeguard you from doctor bills and damage suits. These Belt Sticks are made in two sizes, 1 to 4 in. and 4 to 6 in., at one price, only \$1.25 each or \$12 a dozen.

*Side-step that accident
by ordering some today*

The Ready Tool Co.
Bridgeport, Conn.



Premier Universal Tool and Cutter Grinder

With a swing of 8" and capacity of 15" between centers, together with the regular equipment furnished, it will grind almost any cutter or other tool used in a modern tool room. Workmanship, material and design of the highest quality.

*Write for descriptive
Circular*

Immediate Delivery

Simmons 10" Universal Index Centers



Manufactured with the idea of supplying the market with a device in which accuracy, durability and simplicity are the main issues and in which no one feature is sacrificed for another.

The price is the lowest consistent in keeping with the above standards. Our production is such that immediate delivery can be made.

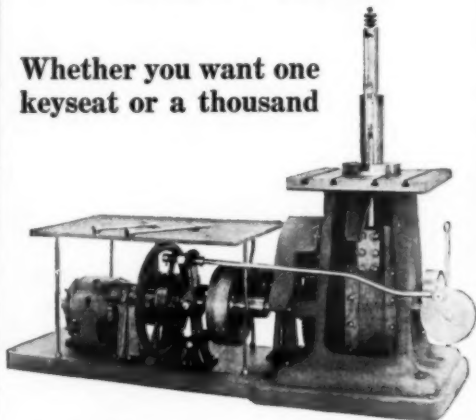
You need one? Order now!

Simmons Machine Co., Inc., Albany, N. Y.

New York, 1001 Singer Bldg. Detroit, 804 Dime Savings Bank Bldg.
Buffalo, 358 Ellicott Square

Quick Keyseating With the Catlin

Whether you want one
keyseat or a thousand



The work is instantly and exactly centered by the bore, and the keyseat is accurately cut with the proper taper, whether hubs are finished or not. This enables duplicate keyseats to be cut to one-thousandth of an inch without special tools or even special skill. Hubs do not even have to be faced.

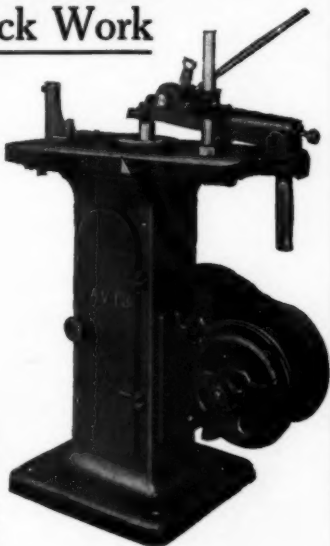
And the Catlin way of making keyseats is not only the quick and accurate way, it is the cheap way. Shop records everywhere show that the cost of keyseating is materially reduced when the Catlin machine is installed.

Examine the machine in detail. Note how few parts, how simple and strong they are, and how effective. We have a large folder which shows the construction and operation of the keyseater very clearly; may we lay one on your desk?

Your permission to do so will be appreciated

Chattanooga Machinery Co.
Chattanooga, Tenn.

Modern Methods for Quick Work



A DAVIS KEYSEATER

Motor driven,
will save you
valuable space
as well as in-
crease your pro-
duction. It is
an investment
you can't afford
to overlook.

Write for Circular

DAVIS MACHINE TOOL CO., Inc.
ROCHESTER, N. Y., U. S. A.

Highly Polished Rivet Heads



And One Every Second

There are no hammer or tool marks on rivets headed with—

The Grant Rotary

Rivet Spinning Machine. They are highly polished, as tight or loose as desired, and straight.

A Boy or Girl

can operate the Grant to full efficiency, which, with its large output, insures bed-rock cost. And the quality is something to be proud of.

Isn't this worth investigating?

The Grant Mfg. & Machine Co.
C. E. Station, Bridgeport, Conn.



Punches That Pay

We make them so good that we know they will pay you, which is our insurance that they will pay us.

You Can Depend Upon T. H. L. Punches

They will be uniform in size, in hardness, and in endurance. When you start something with them, you know you can finish it, and that the last punchings will be just like the first.

If you value quality in your punches, let us make them

T. H. Lewthwaite Machine Co.
415 East 31st St., New York City

Riveting Revolutionized

"The Hammer with the human stroke"

Heads Rivets Cold



Heads 'em tight or loose, flush, countersunk, or finishes heads any shape desired at the rate of:—

A rivet a second, sizes up to 3-16 in.

A rivet in two seconds, sizes 1-4 to 3-8 in.

A rivet in three seconds, size 7-16 to 5-8 in.

Built in Eight Sizes

Send us sample assembly parts with rivets or sketch of your work, and let US shoulder your riveting problems.

Send for the High Speed Hammer Book

Department 13

The High Speed Hammer Co., Inc.
Rochester, New York

Redface Pulleys

Sheaves and Fly Wheels



PERMANENT: They are permanent, as they are not affected by age, heat, cold or moisture.

RELIABLE: They do not loosen up under vibration or intermittent loading.

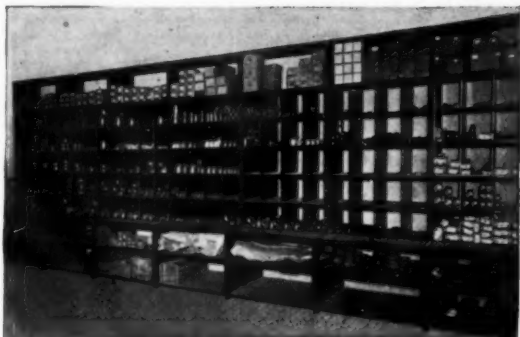
RUN TRUE: They run true, steady the line shaft, and have a very small load due to windage.

REDFACE PULLEYS are especially adapted to use on motors, fans, pumps and special machinery.

Catalog mailed promptly upon request

Pyott Foundry Co.

Cast Iron Pulleys, Sheaves and Fly Wheels
328 N. Sangamon St., Chicago, Ill.



Terrell's Steel Equipment

Is in Line with the Best Modern Practice

The modern tendency is toward the economy of better and more permanent equipment throughout, whenever it can be secured at a reasonable cost.

Terrell's Steel Shelving, Bins and Lockers afford a permanent construction of modern, sanitary, non-combustible equipment at a cost which spells a decided economy when considered from the standpoint of permanent utility.

It is permanent for the reason that it is practically everlasting, and so flexible in its arrangement that it is easily changed without loss or damage to meet changing requirements, or it may be moved to new quarters and arranged as desired, and added to like a sectional book-case.

Facts and figures at your service without obligation

Terrell's Equipment Company

Hall & Division Sts., Grand Rapids, Mich.

Common Sense Tells You



that your money will not buy a better tool than one correctly manufactured from the best raw material procurable.

Tungsten-alloy steel, milled teeth and uniform temper are all features of

Liberty Hack Saw Blades

Liberty blades are more than ordinary hack saw blades—they represent the utmost in the construction of metal cutting saws.

Our .049—10 point blade is recommended for use in all high speed hack saw machines.

Sterling Products Co., Inc.

549 Washington Blvd.,
CHICAGO

15 Park Row,
NEW YORK

Many good keyseats

have

been milled with this

KEYSEATER

Do You Need One?

For Full Particulars

Write for Catalog O

National Machine Tool Co.

2266 Spring Grove Ave.,

Cincinnati, O.



Peerless **HIGH SPEED**

THE NEW STANDARD

Cuts 50 to 100% Faster



Put us to the test

We claim that it cuts 50 to 100 per cent faster than any other machine of its type; that it saves in time, labor, blades and material; and that where a number of sawing machines are employed, it saves in the number required, and in floor space.

As we are willing to back up these claims at our own risk and expense, why not put us to the test? We will ship you a Peerless on 30 days' trial, and if by the end of that period you do not find it to be the best hack saw you ever used, ship it back and we will pay freight both ways. There are no strings to this offer—you are to be the sole judge of the machine and of its value to you.

The sooner you get it the more you will save

Peerless Machine Company

1609 Racine Street,

RACINE, WISCONSIN

Peter Bros.' Abrasive Metal Cutter

Cuts Through Anything

This light-running, ball-bearing machine has no equal for cutting high speed and other hardened steels, copper and brass tubing, aluminum, broken reamers, taps, drills, forming tools, etc. Makes a rapid, thin, clean cut. Doesn't draw the temper. Saves time and material. Simplest and best machine on the market. Often saves its cost in a month, and lasts a lifetime.

8" Size \$17.50, with C. S.

Splendid for tool room. Cuts high-speed steel up to $\frac{1}{2}$ " square.

12" Size \$50, with C. S.

Cuts up to $\frac{3}{4}$ " diameter, round or square, at any angle up to 45 degrees. Ball bearing.

15 Days' Free Trial

Write us or ask your dealer

PETER BROTHERS MFG. CO.
115 Railroad St., Algonquin, Ill.



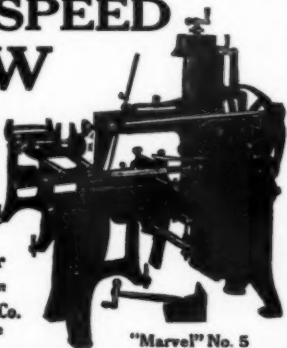
AUTOMATIC HIGH SPEED SAW

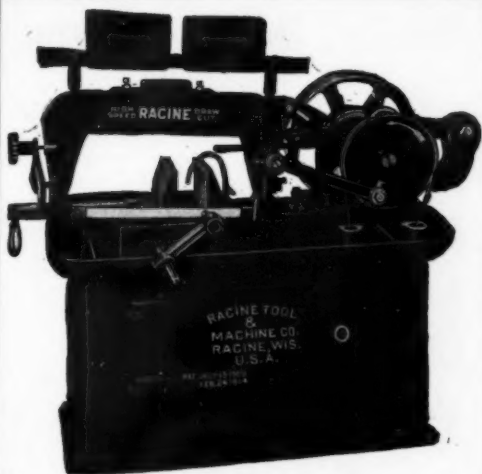
Attention is invited to the "Marvel" No. 5. Cuts duplicate pieces faster and at less cost than any other method. Entirely automatic.

Feeds the Bar

Write for full information

Armstrong-Blum Mfg. Co.
341 N. Francisco Avenue
Chicago, Ill.





The "Racine"

The Original, High Speed, Automatic
Positive Lift, Draw Cut
Metal Cutting Machine

Our line is complete—30 different types. Advise us of your requirements and we will quote on a machine suitable for your work.

Catalog "H" gives full particulars.

Racine Tool & Machine Co.

Racine, Wisconsin, U. S. A.

Use "RACINE" H-S Tungsten Power Blades

Peter Bros.' Abrasive Metal Cutter

Cuts Through Anything

This light-running, ball-bearing machine has no equal for cutting high speed and other hardened steels, copper and brass tubing, aluminum, broken reamers, taps, drills, forming tools, etc. Makes a rapid, thin, clean cut. Doesn't draw the temper. Saves time and material. Simplest and best machine on the market. Often saves its cost in a month, and lasts a lifetime.

8" Size \$17.50, with C. S.

Splendid for tool room. Cuts high-speed steel up to 1" square.

12" Size \$50, with C. S.

Cuts up to 2 1/2" diameter, round or square, at any angle up to 45 degrees. Ball bearing.

15 Days' Free Trial

Write us or ask your dealer

PETER BROTHERS MFG. CO.
115 Railroad St., Algonquin, Ill.



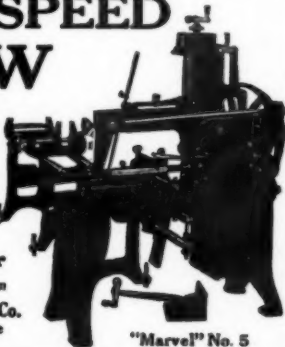
AUTOMATIC HIGH SPEED SAW

Attention is invited to the "Marvel" No. 5 Cuts duplicate pieces faster and at less cost than any other method. Entirely automatic.

Feeds the Bar

Write for full information

Armstrong-Blum Mfg. Co.
341 N. Francisco Avenue
Chicago, Ill.



"Marvel" No. 5



The "Racine"

The Original, High Speed, Automatic
Positive Lift, Draw Cut

Metal Cutting Machine

Our line is complete—30 different types. Advise us of your requirements and we will quote on a machine suitable for your work.

Catalog "H" gives full particulars.

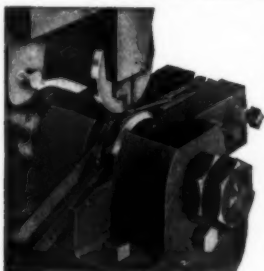
Racine Tool & Machine Co.

Racine, Wisconsin, U. S. A.

Use "RACINE" H-S Tungsten Power Blades

The Gray Sheet Metal Cutter

Is in a Class by Itself



Cutter and Feed Rolls

The picture shows cutter and feed rolls. Feeds like a sewing machine, cuts any intricate pattern, leaves edges smooth and metal flat.

Does more than a rotary shear. Makes many a hard job easy. Often replaces forging.

Nos. 0, 1, 2 and 3 are built with capacities as follows:

18"	throat, cap.	1/8"	plate
34"	"	"	3/16"
36"	"	"	3/8"
36"	"	"	5/8"

Better get the details

W. J. SAVAGE CO., Knoxville, Tenn.

"QUICKWORK"

REGISTERED U.S. PATENT OFFICE

Rotary Shears

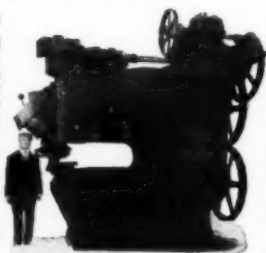
Made in 6 Sizes

Cut all gauges of sheet and plate metal up to 1 inch thick in straight or irregular shapes and openings without cutting in from side of sheet. Leaves square, true edge that requires no finishing. Used in building ships, boilers, tanks, cars & general plate and sheet metal work.

Save 50 to 90%

Eliminates Oxyacetylene cutting and plate planing

Write for catalogue



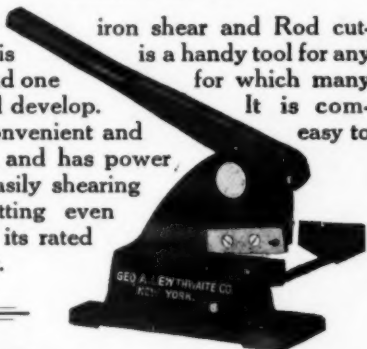
Patented June 3rd, 1913

THE QUICKWORK COMPANY, St. Marys, Ohio, U. S. A.

Lewthwaite

**Shearing, Cutting and Punching Machines
Power and Foot Presses and Benders
Punches and Dies**

Sheet iron shear and Rod cutter. This is a handy tool for any shop, and one for which many uses will develop. It is compact, convenient and easy to operate, and has power to do easily shearing and cutting even beyond its rated capacity.



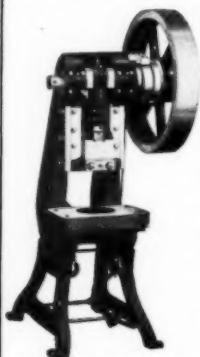
Dependable Punches and Dies
for all makes of machines

Made for service and guaranteed to give it. If you want to know just how strong and durable a punch or die may be made, try one on the hardest job you have.

Have you received our latest catalog of Iron-Workers' Tools. If not, let us send it

George A. Lewthwaite Co.
116 Walker St., - - New York

Here Is A Press



With Plenty of Steam
Back of THE PUNCH

HIGH DUTY
ROCKFORD
PUNCH PRESSES

Made in straight side and inclinable types. Their great power backed by rigid design enable them to do the work you demand and stand up to it.

Write For Catalog

Rockford Iron Works
Rockford, Ill.

Partridge Light Punch Press

For making novelties from sheet metal, including such operations as stamping, blanking, piercing, bending, forming, perforating, embossing, shearing and wire cutting. Has exceptional strength for its size.

Carefully adjusted to secure accurate working of the dies, and to prevent shearing. Pendulum action of lever gives a stroke of maximum power without tiring operator. Workmanship and material the best.

Write me for the interesting price

E. O. PARTRIDGE, 2041-2049 CHICAGO
W. Lake St.

Also Bench, Column & Cabinet Grinders, Polishing Lathes, Light Punch Presses, Hollow Mills, Countershafts, Chuck Arbors and Saw Mandrels.



Our Pipe Benders Meet The Demand



Ever since their invention our hand Pipe Benders have had a steady sale and have given universal satisfaction.

Recently, we have made some improved attachments that permit of a wider range of work and open up a new field in the kind of bending the machine will accomplish.

If you do pipe bending you will find our machine an economical, simple and very efficient appliance in reducing costs and doing better work. For 2" and under.

We have a Bulletin waiting for you. Send for it now.

Pedrick Tool & Machine Co.

3644 N. Lawrence St., Philadelphia, Pa.

Manufacturers of Cylinder Boring Bars, Portable Millers, Crank Pin Turning Machines, etc.

The Acme Roll Feed

**Doubles and Trebles Output
On Any Make of Press**

Feeds accurately at high speeds
and makes the operator safe.

Furnished with scrap cutter and
straightening device if desired.

Mounted on its own bolster plate,
it is easily put on or taken off.

Used by the U. S. Government.

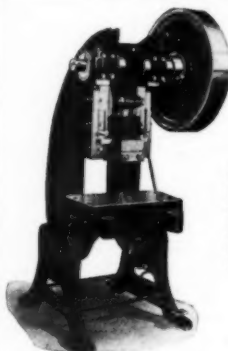
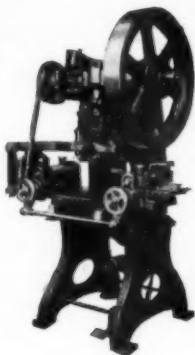
We make roll feeds, dial feeds
and other special feeds for all
makes of presses.

Write for full details

Acme Machine Works

4125 E. Ravenswood Ave.,

Chicago, Ill.



Inclinable Power Presses

**For Rapid
Production**

They are heavy duty machines, of most recent design, and they embody every improvement that long experience with presses and their work could suggest. You will find their improvements worth your study, because they make for an increase in output and a reduction in cost.

**No. 4 Flywheel Press
shown; 34 tons pressure**

*Other sizes and styles
Ask about them*

Loshbough-Jordan Tool & Mche. Co.
Elkhart, Indiana

A large, dark, industrial machine, likely a press or pump, mounted on a heavy base. The machine has a long horizontal handle or lever on the left side and various mechanical components on top. It is set against a light, textured background.

Send for Shear Catalog

Manufactured and For Sale By

No.	0	-Shear (Tool Makers Bench Machine) Fitted with Bushings to Cut $\frac{1}{8}$ " & $\frac{1}{16}$ " Iron Rod and under, $\frac{1}{16}$ " Flat Iron and under.
No.	1	-Shear Fitted with Bushings to Cut $\frac{1}{8}$ " & $\frac{1}{16}$ " Iron Rod and under, $\frac{1}{16}$ " Flat Iron and under.
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Shear blades have a draw-in cut with no tendency to crowd work out of shear. Pressure is directly over the cut by a rolling contact. Arm of movable blade is operated with a steel band. No springs on the machine.

Universal Angle Plate

For Machining at Any Desired Angles
On Any Type of Machine Tool



8"x10" Worm Adjusting—Made in Four Sizes

It moves through a complete circle horizontally and 90° vertically, and has a vernier attachment reading to 5' for especially accurate work.

Its value is almost unlimited for holding work to be machined at one or more angles without re-setting.

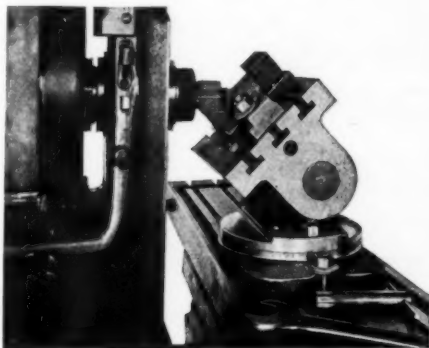
It will convert your plain miller or grinder into a universal machine, and wherever used it saves time and money far beyond its reasonable cost, and insures a high degree of accuracy which often cannot be secured in any other way without the most painstaking care.

May we send complete data and prices?

Boston Scale & Machine Co.
100 Ruggles Street, Roxbury, Mass.

Quickness and Accuracy

Combine to put the
Reid Universal Fixture
in a Special Class



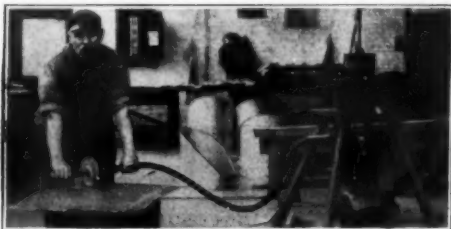
The double vernier gives instant readings to 1/12th of a degree—with a sine bar even finer ones—and as the fixture swivels 360 degrees horizontally and 180 degrees vertically, any angular position for milling, drilling, planing, shaping and grinding is easily and quickly obtained.

The design eliminates all overhang, prevents the lodging of chips and dirt, and all other causes of inaccuracy. It gives the ordinary machinist the facility of an expert in handling difficult work efficiently and rapidly.

May we have your permission
to explain its merits?

Reid Bros. Co., Inc., Beverly, Mass.

The Stow Flexible Shaft



The adaptation of the Stow Flexible Shaft to the operation of machine shop tools, enables you to grind, drill, ream, tap and do many other things without bringing the work to a machine. A convenient time saver.

Not expensive; ask about it.

Stow Flexible Shaft Company
26th & Callowhill Sts., Philadelphia, Pa.

Draw-in and Thrust Chucks

for Tool Room Lathes and Screw Machines. Look for the name "Hardinge Brothers" and write us. And did you ever ask us to make those—

Screw Machine Collets

with regular or irregular holes? We are prepared to make good deliveries. Why not try us next time? Quantities never too small or too large to interest us.

When making inquiry, kindly refer to "Chuck Department"

Hardinge Brothers, Inc.
Chicago, Ill.

Cap.
20
Tons



List
Price
85⁰⁰

WEAVER Forcing Press

WE ARE SPECIALIZING upon this one size and style of press. It is the ONLY press we make, therefore we are able to produce a better article at less money than were we compelled to carry the overhead necessary to produce a great variety of styles.

5-inch, 9-pound channel steel frame, 32-in. wide, 15-in. hand wheel, carried upon ball bearings. Bronze Thrust Bearings, Screw 2 in. in diameter with 3-pitch Acme thread. Range of movement, 12 in. The screw does not revolve.

List Price (^{32-in.}Width) \$85.00

Weaver Manufacturing Co.

2179 So. 9th Street,

Springfield, Illinois



No. 24 Press

Efficient Equipment Atlas Presses

for building and repairing automobiles and general machine shop operations requiring pressure up to 25 tons and centering capacity up to 36 inches.

For driving mandrels; bending and straightening, broaching, embossing with dies, setting bushings and many other every day manufacturing jobs, there is an Atlas Press. All sizes for all purposes. *It will pay you to investigate.*

Atlas Press Co.

317 N. Park Street,
Kalamazoo, Mich., U. S. A.

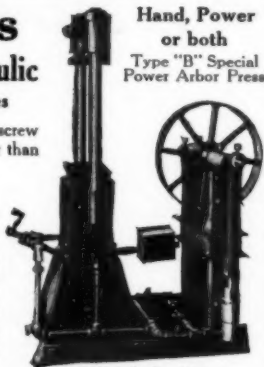
Presses Lourie Hydraulic

Many Styles and Sizes

Easier to operate than screw or geared presses; quicker than screw presses; better.

10 to 2,000 Tons

We build to order anything in hydraulic presses, horizontal or vertical. If you use presses for any purpose, consult us; we may be able to save you money. Information will cost you nothing.

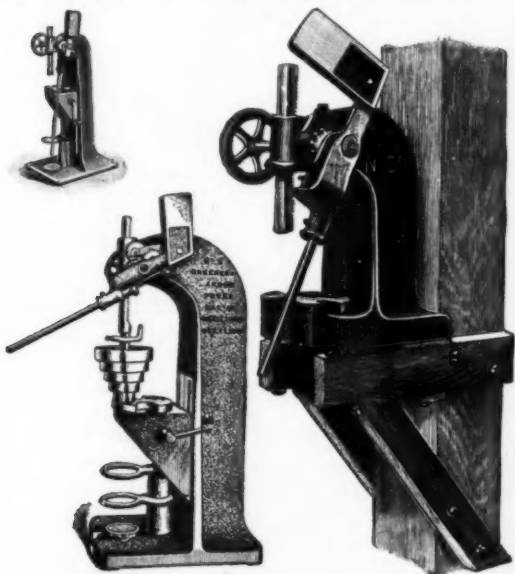


A Good Press for Broaching.

LOURIE MFG. CO. Springfield, Illinois

Greenerd Arbor Presses

Made in numerous styles and sizes, with pressure capacities ranging from 15 pounds to 40 tons, for work of all kinds where a steady, even pressure may be employed, from driving pins and arbors to straightening automobile axles.



In a thousand-and-one ways they save so much beyond their cost in time, temper and material, that they are *not* an expense, but a source of *constant profit* to the thousands of shops that are never without them.

Ask your dealer or write for Catalog to—

Edwin E. Bartlett, Nashua, N. H.

Self-Oiling, Dirt-Proof "Giant" Universal Joint For Heavy Duty



Efficient to an
angle of 45
Degrees

Vanderbeek
Universal
Ball Joints
for higher
angle drives

Wearing contacts are of hardened steel, the stem ends are strong and well braced, and the whole design is so strong and carefully constructed that it will safely drive well over its rated capacity. The thousands running without failure or fault prove their dependability. Glad to have you try it out.

Ainslie Machine & Tool Works

Successors to Vanderbeek Tool Works
HARTFORD, CONN.

Greater Pull of National Clutch Was Confirmed By Cruel Tests



NOTE
the principle:
Friction
Wedge
Plates

After many tests and years of use in various industries, the National Clutch proved its superior pulling power most conclusively. The unique feature is the transversely tapered plates, working in opposite directions. No springs or weak parts to get out of order. Their use improves any machine tool.

Glad to submit estimates. Tell us your needs

National Clutch Company
1859 Fulton St., Chicago, Ill.



***Yearly
Losses
in
Tools
Saved***

You can write indelibly on steel

even when hardened, just as easy as with
a pencil on paper, by means of

THE ELECTRO-STYLOGRAPH

Very useful for permanent marking of tools,
gages, dies, metallurgical test specimens, etc.

THE ELECTRO-STYLOGRAPH CO.

2 EAST 24TH STREET,

NEW YORK



We manufacture a great variety
Lathe Chucks, Drill Chucks, Centering Chucks
Also
Portable Jaws for Lathe face plates and Machine tables.

Let us send you our Catalog

The Cushman Chuck Co.
Established 1862 **Hartford, Conn.**

Write For Catalog No. 11-C

Descriptive of Sweetland Chucks



It describes about every kind of a lathe chuck you could possibly need, and is a mighty good thing to have on file for quick reference.

You will find the "Sweetlands" a little unusual, by the way, in their adaptability to take a quick and firm grip on work of all kinds of shapes, and in the way they stay gripped.

If the Catalog should get you in the Sweetland habit, you will bless the day you sent for it.

Why not write for it today?

The Hoggson & Pettis Mfg. Co.
New Haven, Conn., U. S. A.



JACOBS IMPROVED DRILL CHUCKS

**The drill chucks of widest use
Because good in every way**

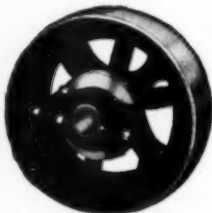
They clamp quickly and easily,
align drills properly, and drive them
true, insuring a maximum output
of accurate work.

They allow the drill shank to
cease revolving the instant drill-
ing end stops rotating, insuring
a minimum of drill breakage.

Better have the Catalog

**The Jacobs Mfg. Co.
Hartford, Conn., U. S. A.**

**Best in the long run
We welcome your test**



Double Gripping Power

The Carroll Clutch

Is strictly a high grade countershaft clutch pulley for machine tool drive. Oil them every second month, and forget your clutch troubles.

Write for details of better clutches

L. W. Carroll Manufacturing Co.
Batavia, Ohio

**They have made good on thousands
of machines of every description**



Enclosed Type, Self-Oiling

The proof is not in what WE
SAY they will do, but in what
they HAVE DONE and
ARE DOING.

EDGEMONT Friction Clutches

have been used as their standard clutch for many years by the leading machine tool builders of the country—names on request. There could be no harder or more successful test for any mechanical device.

Write for Catalog and names of big users

The Edgemont Machine Co.
Dayton, Ohio

Special Clutches and Transmission Machinery for all purpose.

Does Faster Chucking!

The Barker Chuck Can Save You Money

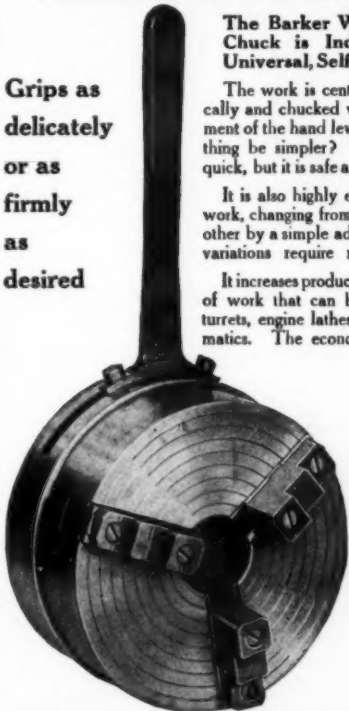
Grips as
delicately
or as
firmly
as
desired

The Barker Wrenchless
Chuck is Independent,
Universal, Self-Centering

The work is centered automatically and chucked with one movement of the hand lever—could anything be simpler? Not only is it quick, but it is safe and dependable.

It is also highly efficient for bar work, changing from one size to another by a simple adjustment; slight variations require no adjustment.

It increases production of any type of work that can be chucked on turrets, engine lathes or semi-automatics. The economy is obvious.



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BARKER CHUCK DIVISION
THOMAS ELEVATOR CO., MFRS.
22 S. Hoyne Ave., Chicago, U. S. A.

For Balancing

Anything That Turns On a Shaft
Anderson Ever-Ready Ways

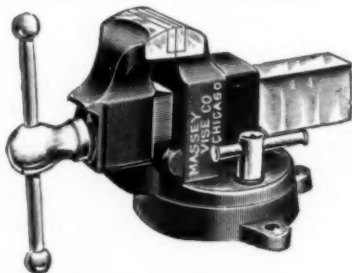


**Quick, Easy
Reliable**

No adjusting. The discs are of chilled iron, ground true on the face, and put in perfect balance. As they run in ball bearings of a special design, they are practically frictionless and tell instantly whether anything placed on them is in balance. An everlasting convenience that costs but little money.

Several sizes; ask about them

Anderson Bros. Mfg. Co.
115 Morgan St., Rockford, Ill.



Our new No. 18 Catalog just off the press illustrates our complete line of iron and woodworkers' vises. *Write for a copy.* Massey vises are guaranteed to give you the service you have a right to expect from good shop equipment.

Massey Vise Company

549 Washington Blvd.,

Chicago, Ill., U. S. A.

Alert Roller Grip Stub Arbors



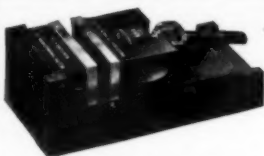
Be up to the minute! Get a 25% increased production! Adopt ROLLER GRIP STUB ARBORS for your work. Don't waste your time driving Mandrels in and out of your work, let a ROLLER GRIP do it. Forget your arbor press. Stub Arbors made in all sizes.

Send for circulars (SA).

Alert Tool Company

237 North 6th St.,

Philadelphia, Pa.



Nestor Vise

Here are its Features:

Work is gripped almost instantaneously—moves from maximum to minimum with quick action sliding jaw.

For size and weight an extraordinary gripping range is provided.

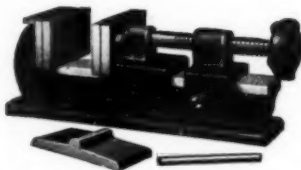
Hole can be drilled at right angles without taking work from vise.

Special provision makes it impossible for jaws to cock up. Immediate delivery.

Write for particulars, sizes and prices

Nestor Manufacturing Co., Inc.
40 W. 13th St., New York City

GEM VISE



Drill Vise suitable for the Tool Room and Machine Shop. Write for prices and further description.

Made by

J. E. Martin Tool & Die Co.

548 West State Street,

Springfield, Ohio

Yost Vises

The Favorites of Skilled Mechanics



Solid Jaw, Stationary

Yost Vises are made for every machine shop purpose. The four here shown are only a part of our complete line, as shown in the illustrated Catalog.

The skilled mechanic is the best judge of vises, and it is among that class of critical users that the "Yost" has a high reputation the world over.



Solid Jaw, Swivel Base



Universal Double Swivel

The Yost Drill Press Vise replaces special and costly jig fixtures so often necessary in drill press operations. It has "Yost" quality and convenience.



Yost Drill Press Vise

Better have the Catalog on hand for reference

Yost Manufacturing Co.
Meadville, Pa.

Standard Boring Bar—Any Size

For Lathe Work—Automatic or Hand Feed

Figure 122



THE UNDERWOOD Boring Bar can be removed and reset as often as required without changing original alignment. Has continuous geared feed with two changes.

It is quickly and securely bolted to the face plate, which gives it all the rigidity of the lathe and also centers that end of the bar. Besides doing perfect work, the Underwood Bar enables you to use the whole power of the lathe.

We have been building Portable Tools for nearly half a century. Our line now includes:

Millers; circular planer tools; radius planers; rotary planers; machines for truing eccentrics, facing domes, arms for facing cylinder flanges; rotary flue cleaners; armature and axle bearing borers; pipe benders; locomotive cylinder borers; boring bars for lathe work; crank pin turners; reflex water glass grinders, motors, etc.

If interested in economy, send for our Catalog

H. B. Underwood Corporation

1015-25 Hamilton St., Philadelphia, Pa.

Second-Hand Machinery.

Lists of Second-Hand machinery, either for sale or wanted, set in uniform style, will be published under this heading at the rate of **50 cents a line**, across the page, each issue. Minimum charge, **\$4.00**. Sub-headings are counted as one line, but the name and address of advertiser are not included in the space charged for. No display in this department.

Write directly to those offering the machines for sale for prices and full descriptions. If what you require is not listed, use the blank enclosed to make known your wants to the publisher.

WANTED BY

E. O. Partridge, - **2045 W. Lake St., Chicago**
OIL GROOVER.

One Fischer oil groover, or equal; state price and condition.

WANTED BY

Furniture, Care A. H. Hitchcock, **1220 Caxton Bldg., Chicago, Ill.**

We are in the market for the following machines:

- 1 Gang splitter, capacity about No. 14 gauge steel.
- 2 Swaging machines.
- 2 Tube straightening machines.
- 2 Tube rolling machines.

FOR SALE BY

Machinery Warehouse Co., **1405 West 37th St., Chicago, Ill.**

LIGHTING GENERATORS.

- 4000-Light Western Electric Co. generator 125 volt direct current for belt drive, complete with 22x26 pulley, rails and switch board. Speed 470.
 - 2000 Light Western Electric Co. generator. 125 volt, direct current, for belt drive or direct connection to engine; has half coupling on shaft. Speed 280.
 - 1320 Light Milwaukee Electric Co. generator. 125 volt direct current for belt drive, complete with 14x10 pulley, rails and switchboard. Speed 1125.
 - 1900 Light Westinghouse Electric & Mfg. Co. generator, direct connected to an 8x8 vertical double cylinder Westinghouse steam engine, 125 volt, direct current. Speed 325.
- Rated on a basis of 40 tungsten, 25 watt, 20 candle power lamps to the k. w.
Write for our stock list of Rebuilt Machinery.

FOR SALE BY

Girard Machine & Tool Co., **491-493 N. Third St., Philadelphia, Pa.**

- Boring and chucking machine, vertical, 36" Brown & Sharpe.
- Engine lathe, 24"x12" Pratt & Whitney.
- Engine lathe, 25"x16" Blaisdell.
- Engine lathe, 28"x12" New Haven.
- Lot of 12, 14, 16 and 18" lathes, with various size heads.
- Planer, 36"x36"x12" Wilson, two heads on cross rail.
- Planer, 30"x30"x 8' Woodward & Powell, one head on cross rail.
- Planer, 24"x24"x 6' Woodward & Powell, one head on cross rail.
- Turret lathes, 2"x24" Jones & Lamson, geared set-over head, single pulley drive, bar equipment, (2).
- Turret lathes, No. 3 Foster, 1 1/2" automatic chuck capacity, oil pan, pl. hd., (4).
- Lot of other size lathes and screw machines, drill presses, etc.

SECOND-HAND MACHINERY

FOR SALE BY

McCoy-Brandt Machinery Company

Office and Warehouse, 210-218 Penn Ave., Pittsburgh, Pa.

NEW EQUIPMENT.

LATHES.

- | | |
|-------------------------------------|--|
| 19"x14' Sidney, q. c., d. b. g. | 16"x 8' South Bend, s. b. g., cone. |
| 19"x12' Sidney, q. c., d. b. g. | 16"x 6' South Bend, s. b. g., cone. |
| 19"x10' Sidney, q. c., d. b. g. | 15"x 6' South Bend, s. b. g., cone. |
| 17"x10' Sidney, q. c., d. b. g. | 13"x 6' South Bend, s. b. g., cone. |
| 15"x10' Sidney, q. c., d. b. g. | 14"x 6' Filsmith, semi-q. c., cone. |
| 15"x 6' Sidney, q. c., s. b. g. | 16"x 6' Filsmith, q. c., d. b. g., cone. |
| 18"x10' South Bend, s. b. g., cone. | 10"x 4' Climax, s. b. g., cone. |

MILLING MACHINES.

- | | |
|---|--|
| No. 1 American, geared, plain. | No. 1 Bickett, pl. hand, table 54"x24". |
| 10"x23" Bristol, vertical, with 13" rotary table. | No. 0 Bickett vertical profiler, table 7"x10". |
| No. 1 U. S. pl., hand, table 48"x23". | No. 2 Cleveland universal. |

DRILL PRESSES.

- | | |
|--|--|
| 25" Weigel, sliding head. | 14" Excelsior, sens., 2 tables, (4). |
| 25" Silver, sliding head, geared, (3). | 10" Burke sen. bench, cap. 5/16", (5). |
| 30" Silver, plain or geared, (18). | 9" Western Chief, bench, 4", (8). |

POWER METAL SAWS.

- | | |
|---|--------------------------------|
| Peerless, capacity 13"x16" motor bracket, with speed box. | Peerless, cap. 6"x 6" belted. |
| Peerless, capacity 9x9", belted. | Economy, 6"x 6" belted, No. 2. |
| | Economy, 8"x 8" belted, No. 4. |

ARBOR PRESSES.

- | | |
|------------------------------------|------------------------------|
| No. 3 Greenerd, (3). | No. 5 Greenerd, with stand. |
| No. 3-A Greenerd, (4). | No. 15 Greenerd, with stand. |
| No. 34 Greenerd, with stands, (2). | |

GRINDERS AND BUFFERS.

- | | |
|---------------------------------------|--|
| No. 2 Woods universal tool & cutter. | 14"x4" W. & P. gr. and pol., No. 14 T. |
| 15"x2" Webster & Perks wet tool. | No. 0 W. & P. pol. & b'ng la's. (3). |
| No. 4 W. & P. polish. & buf. lathe. | 12" Patch, double end, with col. |
| 10" Patch, dbie. end, with col., (3). | 18" Patch, double end, with col. |

MISCELLANEOUS.

- | | |
|--|---|
| Hammers, 50 & 100 lb. Little Giant. | Shaper, 28" Queen City, crank, grd. |
| Press, No. 4 Garrison, o. b. i., 2" str. | Shapers, 18", 21" & 24" Hollingsworth, crank, geared. |
| Shaper, 24" Kelly, crank, geared. | |

USED EQUIPMENT.

BOLT CUTTERS.

- | | |
|-------------------------------------|--------------------------------------|
| 4" Acme, double-head, with motor. | 14" Acme, sgl. hd., pump & pan, (2). |
| 14" Acme, dbie.-hd., oil pump, pan. | Nut taper, 3-spld. Acme, 14", pan. |

DRILLING MACHINES.

- | | |
|-----------------------------------|--------------------------------------|
| Radial, 6' Pond plain. | 24" Colburn hvy. duty, No. 4 Morse. |
| Radial, 36" Dreses & Mueller, pl. | 24" Barnes, plain, sliding head. |
| Radial, 36" Bickford, plain. | 24" Cincinnati, pwr fd., sliding hd. |
| Multiple 8-spindle Foote-Burt. | 28" Back geared, power feed, spld. |
| 20" Baker heavy duty, power feed. | 1-3/16" hole. |

LATHES.

- | | |
|---|--|
| 48" Niles car wheel turning, journal attachment, m. d. | |
| 46"x25' (centers) Fifield triple geared. | |
| 42"x24' Fifield triple geared. | |
| 42"x20' Niles boring lathe. | |
| 26" Lodge & Shipley wheel or pulley lathe. | |
| 28"x14' R. M. & C., h. s., c. r., t. a., 24" 4-jaw chuck. | |
| 24"x15' New Haven, h. s., c. r. | |
| 24"x15' Fifield, solid spindle, plain rest. | |
| 24"x12' S. B. & E., 5" raising blocks, h. s., c. r., 18" 4-jaw chuck. | |
| 16"x8' Johnson, s. b. g., c. r., solid spindle. | |
| 16"x 8' Prentice, c. r., h. s., 12" 4-jaw chuck. | |
| 16"x 6' Prentice, h. s., c. r., 12" 4-jaw chuck. | |
| 16"x6' Johnson, s. b. g., c. r., solid spindle. | |
| 16"x 6' R. M. & C., h. s., c. r., 12" 4-jaw chuck. | |
| 16"x 6' LeBlond, h. s., c. r., 12" 4-jaw chuck. | |
| 14"x 5' L. & S., h. s., c. r., 10" 4-jaw chuck. | |

SECOND-HAND MACHINERY

McCoy-Brandt Machinery Company—Continued.

USED EQUIPMENT.

LATHES—TURRET.

3x36" J. & L., bar and chg'g. equip.
3x36" J. & L., bar equipment.
No. 4 W. & S. w. l., 6-hole round turret.
2½" Garvin, 6-hole hexagon turret, 12" box chuck.

B. & S. 14" h.s., 7-hole round turret, 9" box chuck.
24"x12" Johnson, 6-hole turret.
16" American Fox, 6-h. turret.
16"x6" Reed, tur. on shears.

GRINDERS.

126" Bridgeport, cupwheel, knife.
B. & S. plain, 12x12", auto. feed.
Bath univ. tool & cutter, 14x40".

No. 13 B. & S. universal & tool, auto. feed.
Diamond, knife, 21" wheel.

MILLING MACHINES.

No. 4 Garvin plain, table 6x30".
No. 1 B. & S. plain, hand feed.
No. 3 Cincinnati univ., 12" div. hd., driving mechanism for spiral grs.

No. 3 Cincinnati plain, q. c. g.
No. 3 B. & S. universal, 12" index head, table 10x50".

MOTORS AND GENERATORS.

30 & 20 h. p., 3-60-220 v.
3 h. p., 3-60-220 v.
10 h. p. Fairbanks, 2-60-440 v.
1 h. p., 3-60-220 v., 1800 rev.
10 & 4½ h. p., series wd., 220 v., d. c.

7½ h. p. Triumph, 220 v., d. c., elev. duty
15 & 5 h. p. G. E., 500 v., d. c.
10 h. p. Westg., 500 v., d. c., 1250 rev.
12½ k. w. G. E., 125 v., d. c., 1500 rev.
90 k. v. a. Lincoln, 3-60-220 v.

PRESSES AND BRAKES.

No. 13 Bliss toggle.
No. 25 Niagara, arch, 2½" str., 3200 lbs.
Perkins punch, 2" stroke, 4,500 lbs.
No. 4 Stiles, 1½" str., 5,000 lbs., pl.
No. 65 Spe'l Toledo (cam), 7 & 4" str.
Punch press, Bliss geared, 8,500 lbs.

No. 6½-A Perkins sgl. cr., grd., 2" str.
Consolidated, geared, 4" stroke.
Waterbury Farrell, geared, str. 8".
13" 6" Garrison brake or press, cap. 4", weight 118,000 lbs.
8" Robison hand brake, cap. 16 ga.

PUMPS.

3½"x24" Deane deep well, 25 g. p. m. for motor drive.

3½"x10" Deane triplex, belted.
7x5x10" Hall, duplex, steam.

PUNCHES, SHEARS AND ROLLS.

15" throat, sgl., cap. 4"x4" arch jaw.
15" throat, double, capacity 14"x1", Williams-White No. 13.
14" throat, double, capacity 2½"x1½", No. 11 Williams-White.
24" throats, double, 1½"x1", No. 1 Long & Allstatter.
Guillotine shear, capacity 1½" rounds, Hilles & Jones.
Guillotine shear, No. 3 Wilder, cap. 1, 1½" stroke.
Guillotine shear, No. 3 Cleveland, 3½" stroke, capacity 2" sq.

50" thrt., sgl., cap. 1½"x1" Cincinnati.
Guillotine shear, No. 5 Cleveland, 3" stroke, capacity 2½" sq.
Guillotine shear, Cleveland, 3" stroke, capacity, 2" square.
Slitting shear, rotary, 23" throat, capacity 1½", Newbold.
Slitting shear, rotary, 8" throat, cap. 3/16"; 15" throat, cap. ½".
Bevel shear, Thompson, rated cap. ½".
Squaring shear, 108", capacity ½".
Squaring shear, 26" pwr., cap. 16 ga.
Rolls, 10" Bertsch, cap. 14" gauge.

SHAPERS AND PLANERS.

24" Cincinnati, crank, b. g., vise.
24" Queen City, crank, b. g., vise.

30"x30"x3' Gray, 1 head.

STEAM HAMMERS.

1000 lb. N.-B.-P. dble. frame, (4).
700 lb. N.-B.-P. dble. frame, (6).

700 lb. Pittsburgh, dble. frame, (3).
600 lb. Morgan, double frame, (7).

MISCELLANEOUS.

Arbor press, No. 5 Greenerd.
Boring mill, 37" Niles vert., 2 heads.
Boring mill, No. 1 Sellers horizontal, 24" bar.
Bulldozers, Nos. 6 and 7 W.-W.
Chucks, for lathes and millers, new.
Compressors, 9x5x10" Westinghouse steam, (2).
Cutting-off mche., 8" Brightman.
Gear planer, 12" Gleason.

Pipe mche., 8" Jarecki, dies, eng. dr.
Pipe machine., 12" Curtis & Curtis, engine driven.
Riveter, ½" Shuster.
Seamer, 30" dbl. P. S. & W., hand.
Slotter, New York Steam Engine, 26" rotary table, 12" stroke.
Thread roller, ½" Waterbury-Farrell, with dies.
Tooth rounder, 12" Ingle.

SECOND-HAND MACHINERY

FOR SALE BY

J. J. McCabe Lathe & Mchy. Corporation, 149 Broadway, New York

NEW LATHES ABSOLUTELY IN STOCK.

16"x 6", (3).
16"x 8", (4).
16"x 10", (2).
18"x 10", (10).
18"x 12", (5).
18"x 14", (3).
21"x 10", (3).
21"x 12", (3).

21"x 14", (2).
24"x 12" taper.
28"x 16", (2).
29"x 18", (2).
29"x 20".
29"x 22".

And a few McCabe "2-in 1".

DOUBLE-SPINDLE LATHES.

Covering the capacity of two complete lathes—on the one bed.
48" and 26" swing.
24' bed, 18' between centers.

NEW PLANER TYPE MILLING MACHINE.

52" in width between housings, 48" in height under crossrail, table 16' in length inside pockets, with four (4) heads—two vert. heads on crossrail and two horizontal heads, one on each housing, complete with countershaft or arranged for motor drive. Equipped with a number of improved features not found on any other planer type milling machine built.

CRANK-MOTION SHAPERS (NEW).

12" stroke, plain, (4).
14" stroke, plain, (6).
20" stroke, back geared, (6).

25" stroke, back geared, (3).
28" speed-box, sgl. pulley drive, (3).
32" speed-box, sgl. pulley drive, (4).

RADIAL DRILLS (NEW).

2 1/2' speed-box, tapping att., (6).
2 1/2' cone drive, tapping att., (2).
3' speedy sen. type, tapping att., (2).

3 1/2' speed-box, tapping att., (3).
4' speed-box, tapping att., (5).

LATHES (USED).

102" swing, 40' bed, Putnam.
60" swing, 26' bed, New Haven.
36" swing, 20' bed, Fitchburg.
36" swing, 16' bed, Putnam.
30" swing, 14' bed, Bement.
26/48" swing, 20' bed, McCabe. dbl. spindle, taper.

24" swing, 15' bed, Bement.
24" swing, 10' bed, New Haven.
18" swing, 10' bed, Porter.
18" swing, 8' bed, New Haven.
17" swing, 8' bed, Bridgeford.
16" swing, 8' bed, Hendey.
14" swing, 7' bed, Star.

TURRET LATHES (USED).

28" rigid type, 4" hole, rapid trav.
21" Gisholt gap style, 1 1/2" hol. spd.

20" Potter & Johnston, 2" hol. spd.
3x36" flat turret, Jones & L., grd. hd.

BORING MACHINES (USED).

Horizontal 3" bar Fitchburg.
Upright, 36" Brown & S., tur. hd.

Carwheel borer, 42" Bement Miles.
Carwheel borer, 54" Niles.

OTHER TOOLS (USED).

Shaft straightener, up to 4 1/2" dia., 25' in length, Medart.
Nut tapper, 6-spindle, Acme.
Cutting-off mach., 10' cap., Bement.
Cold saw, 28" blade, Espen-Lucas.
Cold saw, 12" blade, Higley.
Drop hammer, 600 lb. Williams & W.

Hydraulic press, 150 tons cap., for pressing in bushings.
Steam engines (1 horiz., 1 vertical).
Gas engine, 15 h. p., Fairbanks-M.
Boring bar, 4 1/2" diam., 8' 6" long, with sliding head and inserted screw.

PLANERS (USED).

54"x 12' Pond, 4 heads.
42"x 9' New Haven, 1 head.
32"x 10' New Haven, 1 head.

30"x 6' Pond, 1 head.
24"x 6' Gray, 1 head.

GRINDERS (USED).

Universal, 12"x 66" Landis.
Universal, 12"x 36" Iroquois.
Planer type surface, 26" between housings, 8' table, Springfield.

Heavy roll grinder.
Plain grinder, 10"x 30", Bridgeport.
Small grinders, varied assortment.

MILLING MACHINES (USED).

Cincinnati No. 3, pln., tables 52"x 12", longitudinal feed 34", (7).
Brainerd, pl., tbl. 48" long, 14" w., (2).

Newton horiz. & vert. hd., tbl. 60"x 12".
Lincoln type, tables 28"x 7", (10).
New planer type milling machine.

DRILLS (USED).

Upright, 36" swing, Snyder.
Radial, 24' arm, Foadick.

Radial, 6' arm, Niles.
Four spindle Niles, table 8' long.

SECOND-HAND MACHINERY

J. J. McCabe Lathe & Mchy. Corporation—Continued.

GEAR CUTTERS (USED).

Gear shaper, 36" Fellow, cutters. | Gear planer, 24" Gleason, complete.

SHAPERS (USED).

12-14-16 and 20" stroke, various makes.

HYDRAULIC RIVETER (USED).

Chambersburg Bull 8" gap with overhead crane, hoist, accumulator, pump and complete outfit—still set up as used.

AIR RIVETER (USED).

"Albree type" portable style, 19" gap cylinder, 12"x12", cap. 1½" rivets.

PUNCHES AND SHEARS (USED).

Shear, 36" tht., cap. about ¼" plate.

Punch, 14" throat, ¼" capacity.

Revel shears, Lennox rotary, ¼".

Punch, portable, Pels.

Small splitting shears.

BENDING ROLLS (USED).

Wickes Bros., 14' 3" between housings, top roll 14" diameter counterbalanced, raised and lowered by power. Lower rolls 10" diameter. Drop-end housing. Motor drive, with motor and controller complete.

Standard pattern, 8'9" between housings. Top roll 11" diameter. Lower rolls 9". Belt drive.

HORIZONTAL PUNCH (USED).

Hilles & Jones, 60" gap. Capacity ¾" hole thru 1" plate. Weight 68,000 lbs. Arranged for motor—no motor.

BOILER-PLATE DRILL (USED).

Prentice Bros. heavy boiler plate drilling machine, having 4 radial arms. Distance between housings 10'. Table 3' wide, 11'6" long.

FOR SALE BY

Brownell Machinery Co.,

Cutting-off machines, H. & B. 6" accelerated speed type.

Drill, 14" sensitive.

Drill, No. 2 Langelier b. b., new.

Drill, 2-spindle Henry & Wright.

Drill, 20" Snyder, w. & l.

Drop hammer, 200 lbs. plain.

Drop hammer, 400 lbs. automatic.

Gear cutters, No. 3-A Cin'tl., new.

Lathe, 18"x8' Perkins, new.

Lathe, 20"x10' Perkins, new.

11-13 Eddy St., Providence, R. I.

Lathe, 21" Gisholt turret.

Lathe, 24" Gisholt turret.

Planer, 24"x24"x6' Putnam, new.

Planer, 24"x24"x6' Whitcomb.

Planer, 30"x30"x10' Powell, 2 heads.

Planer, 60"x60"x24' Woodward & Powell, 4 heads.

Planer, 36"x36"x12' Powell, 2 heads.

Planer, 36"x36"x12' Woodward & Powell, 2 heads.

Press, No. 5 Perkins, single action.

FOR SALE BY

H. C. Williamson,

321-323 N. Crawford Ave., Chicago, Ill.

Automatics, ½ to 2" Cleveland, (12).

Boring mill, floor.

Boring mills, 2½ & 3½ Binsse.

Boring mill, 72" vertical, 2 heads.

Cutter grinder, P. & W. \$ 175.

Drill, 30" Mechanics, heavy.

Drills, 8 and 14 spindle Baush multiple, 16 and 36 round head.

Drill presses, 22 to 30", (10).

Drill, 20" \$ 65.

Gas furnace and blower. 70.

Lathes, 16, 18, 20, 24, 30 and 38".

Lathe, 14"x6' Prentice. 275.

Lathe, 16" with turret. 150.

Lathe, 24" Putnam. 600.

Millers, Nos. 2 and 3 Cincinnati.

Millers, Nos. 2 and 3 Hendy-N.

Millers, vertical, Beaman & Smith and Ingersoll, (3).

Miller, vertical. \$ 150.

Millers, small rotary, (10).

Pipe machine, 4" 95.

Planer, 24", new. 950.

Planer, 56x12 Gray, 2 heads, good.

Planers, 24 and 28.

Radials, 3, 4 and 5' Bickford.

Shaper, 24" crank. \$ 300.

Slotters, 12 and 18".

Turret lathes, J. & L. Gisholt,

Warner & S., B. & O., (20).

50 h. s. adjustable reamers, for cylinders 3½ to 8½.

20-8" h. s. cutters.

40,000 Carriage bolts.

High speed drills.

\$30,000 worth of screw machine tools.

Adj. facing mills; hollow mills.

50 Other machines.

SECOND-HAND MACHINERY

FOR SALE BY

Cyril J. Bath & Co., 721 St. Clair Ave., N. E., Cleveland, O.

Bought with care, we offer this stock at prices such as our friends can afford in the competition of peace-time manufacture.

AUTOMATICS.

Cleveland automatics from 6" to 24", full equipment; fine shape.
No. 6 Potter & Johnston chucking lathe, late model, good condition.
7"x14" Potter & J. large arm auto. chucking; very fine shape, low priced.
No. 33 New Britain auto. chucking machines, five stations and tapping spindle, handle work up to 2 1/2" diameter in chuck jaws and 5 1/2" swing outside chucks, very good, (3).

BAR STOCK MACHINES.

2"x24" Jones & Lamson flat turret lathes, bar feed.
No. 4 Warner & Swasey screw machine, wire feed, friction back grd., power feed to turret, large equipment, collets and round turret; good.
No. 4 Warner & Swasey universal turret lathes; good as new, (2).
14" Universal 5-spdl. automatics with large equipment; good condition, (2).
2"x24" Warner & Swasey hollow hexagon turret lathes.
44"x30" Bardons & Oliver, with all geared head, motor driven, with motor, capacity up to 4 13-16" stock, large equipment; excellent condition.

BORING MILLS.

No. S. D. 6-spindle Moline hole hog table type cylinder boring machine, 48" between uprights; good as new.
2-B Binsse horizontal, 24" bar, knee type, cross carriage 36"x18".
30" Bullard vertical boring mill, belt feed; excellent condition.
30" Colburn boring mill, plain table, rapid traverse; good as new.
42" Bullard boring mill, old model, good condition.
4-spdl. Foote-Burt vert. cylinder boring mch. with sp. adj. in pairs, 4" fixed centers, 5" min. adj. bet. inside spdls., cone dr., table fd.; excellent shape.

BULLDOZERS.

No. 5 Ajax, stroke 18", cross head 9"x54".
No. 7 Ajax hi-speed, steel bed, 16" stroke, late model, ram face 6' 4"x12", gearing ratio 16:1, 30 strokes per min., double geared; fine, with motor.

DRILLING MACHINES.

2-Spindle 14" Henry & Wright sens. ball bearing drill, table 17"x12".
24" Weigel sliding head, with tapping head, good as new, (2).
3' Fosdick plain radial, cone drive, gear feed, very good.
Carlton sensitive ball bearing radial, new.
No. 11 Natco 8-spindle multiple drill; can be used with 10 spindles; max. drilling area 12"x12"; min. 4"x4"; belt feed; fine shape.

GEAR CUTTERS.

No. 3-26" Brown & Sharpe plain, with all parts; very good condition.
No. 3-36" Brown & Sharpe gear cutter, as above.

GRINDERS.

No. 1 Cincinnati tool and cutter, with all parts, very good.
12" Bristol vertical round surface grinder.
No. 23 Landis plain, 16"x42", with heads if desired, for crankshaft grinding; good condition.
No. 60 Heald cylinder grinder, very good condition.
No. 3 Landis universal, takes 12"x42".
12" and 16" Bryant internal, late model; excellent condition.

LATHES.

Lo-swing lathes, 2-20 tool carriages, fully equipped, good as new, (8).
24"x11" Johnson, gear fd., comp. r., hollow spindle, complete; good condition.
24"x16" Bradford, belt feed, hollow spindle, compound rest, good condition.
24" Gisholt turret, late model, motor dr., t. a., large equip., very fine cond.
24" Steidle turret lathes, latest model, fine shape, (4).
Libby turret lathes, 7 1/2" hole in spindle, 6-hole turret, used two months, (5).

MILLERS.

Taft-Pierce thread miller.
No. 6 Whitney hand miller.
No. 60 Brown & Sharpe plain, hand.
No. 25 Becker pln. hor., almost new.
No. 14 Rockford plain, almost new.
No. 3 Becker vertical, good as new.
No. 3 Brown & Sharpe hi-power, fine.
No. 2 Cincinnati vertical, cone type, good as new, (2).
No. 4 B. & S., cone type, chucking hds., vert. attach., etc., very good.
No. 4 Cincinnati old style, plain, fairly good.
No. 6 Becker vert., belt feed, good.

SECOND-HAND MACHINERY

Cyril J. Bath & Co.—Continued.

PLANERS.

24"x24"x6' Putnam, single head, good shape.
36"x36"x14' Pond, single hd., in good condition, with table 6" thick, no broken
T slots or pegged gears, a good rugged tool, fine condition.
36"x36"x14' 3-head Cincinnati planer, almost new.

MISCELLANEOUS.

Gear testing machine, Brown & Sharpe, practically new.
Running balance machines, Norton, for balancing crankshafts, armatures,
and similar running parts, almost new and motor driven, (2).
Thread miller, Lees-Bradner, spindle to 6" diameter.

FOR SALE BY

The Enterprise Machinery Co.,

28-30 S. Clinton St., Chicago

All sizes boilers, compressors, gas
engines, steam engines and pumps.
Brake, 8' 3-16" power, D. & K.
Centering machine, 4 to 4".
Drills, 3-sp. and 4 sp. Dwight Slate.
Fox lathe, 24" wire feed, like new.
Gear cutter, auto., 36" spur. & bevel.
Hammer, Morgan, 1600 lb.
Lathe, 30"x12", compound rest, \$295.
Lathe, 64"x18", triple geared.
Pipe cutters, 4" and 6".

Planers, 24", 30", 36" and 42".
Planer, Flathead 36x12. \$650.
Planer, 96"x18", 4 heads.
Pulley lathe, 30".
Punch press, Nos. 2, 3 and 4.
Radial, 42" No. 5, taper, good cond.
Screw machine, auto., 5/16", \$375.
Shear, Niagara, 36" 10 gauge.
Shears, 36" to 96", power, new.
Shear, 36", 15" gap, 18 gauge.
500 Other tools. Write for list.

FOR SALE BY

A. D. White Machinery Co., - 108-114 N. Jefferson St., Chicago.

PUNCH PRESSES AND PUNCHES AND SHEARS.

No. 3 American Can, o. b. i.
No. 3A Willard.
No. 3-P Ferracute, solid back.
Waterbury reducing press, 8" str.
No. 29 Bliss, gang, dbl. action.
No. 6 L. & A. 6" thr., cap. 1/2" s. c.

DRILL PRESSES.

23" Rockford, stationary head.
30" Bickford, sliding head.
42" Barnes, sliding head.
1-spdl. Henry & Wright, h. s.
42" Miles plain radial.
New upright drills, 14" to 24".

ENGINE LATHES.

10"x54" Davis.
16"x12" Beaman & Smith.
20"x 8" Boye Emmes, quick change,
double back gear.
24"x10' Putnam.
36"x25" Blaisdell.
28"x10' Fifield.
Niles double axle lathe.

GRINDING MACHINES.

1 1/2" Norton, floor, (2).
1 1/2" Safety Emery Wheel, floor.
2" Springfield, double wheel, floor.
Springfield, dbl. wheel, water.
No. 2 Leland & F., water.
No. 38 Safety Emery Wheel Co.
plow grinder.

MILLING MACHINES AND PLANERS.

No. 3 Cincinnati plain.
22"x22"x5' Ingersoll slab.
No. 6 Becker Brainard, Lincoln.
16"x16"x36" Draper planer.
30"x27" x 6' Putnam planer.

SCREW MACHINES.

7-16" Cleveland, friction feed.
8" Cleveland, friction feed.
1 1/2" Cleveland, friction feed.
1 1/2" Cleveland, jigger feed.
1 1/2" Hartford, (3).
1" Cleveland.
1 1/2" LaVigne.
1 1/2" Cleveland, semi-automatic.

MISCELLANEOUS.

Die filing machine, Simplex.
Gas engine, 35 h. p. Columbus.
Gas engine, 55 h. p. Bruce McBeth.
Hammer, 500-lb. Sandage.
Hobber, No. 1 Farwell.
Keyseater, No. 3 Mitts & Merrill.
Oil gas generator, No. 3 American.
Saw, No. 5 1/2 Nutter-Barnes.
Turret lathe, 24"x26" Greenlee.
Turret lathe, 30" Fay & Scott.

SECOND-HAND MACHINERY

FOR SALE BY

Federal Machinery Sales Company,

8 N. Jefferson St., Chicago, Ill. 212 Sycamore St., Milwaukee, Wis.

USED and NEW Tools.—Immediate shipment.

DRILLING MACHINES.

New 14" U. S. sensitive floor drills, (3).
New Silver 26" stationary head drills, (6).
New Hoefler 24" sliding head drill, b. g., p. f.
Used Cleveland 36" sliding head drill, b. g., p. f.
New Snyder 28" sliding head drill, b. g., p. f.
Used 3-spindle Reed sensitive drill.
New Henry & Wright 1, 2, 3, 4 and 6-spindle ball bearing drills, (20).
Used 24" Dreses plain radial drill.
New 3' Mueller heavy plain radial drill.
Used 5' Bickford full universal radial, a. p., gear box drive.

GEAR SHAPERS.

Used 24" Fellows. | Used 36" Fellows.

GRINDERS.

New No. 1 Grand Rapids universal cutter and tool.
New No. 2 Gardner ball bearing disc grinder.
New Oakley No. 2 universal cutter grinders, (2).
New Ohio No. 2 universal cutter grinders, (2).
Used Saxon horizontal surface grinder, table 36"x12".

LATHES.

New Dalton type B-4, 6"x36" bench lathes on legs, (6).
New Monarch 14"x6" standard engine lathes, (3).
New Monarch 16"x6" standard engine lathes, (3).
New Oliver 16"x7" q. c. g. engine lathe.
Used Flather 17"x6" q. c. g. engine lathe.
New National 17"x6" q. c. g. engine lathe.
New National 17"x8" q. c. g. engine lathes, (2).
Used Schumacher-Boye-Emmes 18"x6" standard engine lathe.
New 18"x6" Hollingsworth standard engine lathe.
New 18"x8" Hollingsworth standard engine lathes, one with taper, (2).
New National 18"x8" quick change gear engine lathes, (4).
New Greaves-Klusman 18"x8" q. c. g. engine lathe.
New Monarch 18"x10" standard engine lathes, (2).
Used 19"x10" Lodge & Davis engine lathe.
New Monarch 20"x10" q. c. g. engine lathes, (2).
New Monarch 20"x10" standard engine lathes, (2).
Used 24"x14" Schumacher-Boye q. c. g. engine lathe.
Used 36" pulley lathe.
Used New Haven 60"x20' bed, triple grd. engine lathe, raising blocks to 784".

MILLING MACHINES.

New No. 0 Bristol, hand, 2 with oil system, (7). | Used No. 2 Cincinnati, plain.
New No. 1 Bristol, hand, (3). | Used Carter & Hakes No. 2 Lincoln miller.
New No. 2 Bristol, hand, b. g. | New No. 3 Kempsmith universal.

PLANERS.

Used Enterprise 30"x30"x6' planer, one head.

PIPE MACHINES.

Used Bignall & Keeler 2". | Used Victor 4".

PRESSES.

New Nos. 18, 19, 20, 21 and 21-B Bliss, o. b. i. presses, (11).
New Style C-3 Ferracute open back inclinable presses, (3).

SHEARS.

New Peck, Stow & Wilcox No. 137-A, a foot power squaring shear.
New Peck, Stow & Wilcox No. 223, 52" power squaring shr., for 14 gauge.
Used Ohl 10' power squaring shear, No. 12 gauge.

SCREW MACHINES AND TURRET LATHES.

Used 14" Pierce turret lathes, (2).
Used Bridgeport 20"x8" turret lathe.
New No. 4 Southworth plain head screw machine, 14".
Used 3"x36" Jones & Lamson, arranged exclusively for chucking, (3).

SECOND-HAND MACHINERY

Federal Machinery Sales Company—Continued.

SHAPERS.

New Barker 16", b. g. crank. New Ohio 24", b. g. crank.
Used Juengst 24", crank.

MISCELLANEOUS.

Cold saw, used No. 3 Burr.
Keyseater, used No. 1 Mitts & Merrill.
Riveters, new No. 1-A, No. 2-A and No. 3-A high speed, (3).
The above list is incomplete. Write us, giving specifications of anything required.

FOR SALE BY

Frank H. Parker Company, **First Nat'l Bank Bldg., Chicago, Ill.**
Machinery Merchants—Telephone, Randolph 925

Bolt cutter, 2 heads, 1 1/2".....	\$ 175.	Lathes, 14" to 18"x6' & 8' (10)* 150.	
Blower, Roots No. 2 pos.....	50.	Milling mch., No. 3 Aurora pln. 600.	
Barrel cleaning, 24"x40".....	150.	Planer, 48"x45"x18' Cin. 3 hds. 6500.	
Chain tackle, 6 ton y. & t.....	150.	Punch press, No. 3 inclinable.. 250.	
Cutting-off machine, 6" cap.....	400.	Planer, 32"x32"x8', 1 head..... 800.	
Drill press, 20" b. g., t. a.....	225.	Planer, 24"x24"x8', 1 head..... 300.	
Grinder, 16"x50" Norton.....	1700.	Pipe cutter, 4" Saunders..... 250.	
Grinder, No. 2 B. & S. univ.....	1200.	Riveter, air, 14" gap..... 175.	
Hammer, 15 lb. Bradley.....	150.	Shear, 10' foot power No. 12 ga. 375.	
Lathe, 42"x16' Niles, d. b. g.....	1200.	Shear, 10' power, 3/16" cap..... 1400.	
Lathe, 25"x22' Niles, c. r., s. s. 1000.		Shear, 6' power, No. 10 ga..... 700.	
Lathe, 30"x14, raisers for 36 & 40" 900.		Shaper, 28" geared..... 400.	
Lathe, 18"x10' Cin. q. c. g., d. b. g. 650.		Shaper, 24" geared..... 250.	
Lathe, 28"x16' Blaisdell.....	300.	Screw machine, 3" auto..... 150.	
Lathe, 18"x6' Bradford.....	200.	Testing mch., Riehle 50,000 lb. 400.	

FOR SALE BY

Frank Toomey, Inc., **127-131 N. Third St., Philadelphia, Pa.**

LATHES.

13"x 7'6" new Carroll-J., pln. chg.	17"x 8' new Sidney, q. c., swings 19".
14"x 6' new Carroll-Jamieson, q. c.	18"x 6' Robbins.
15"x 6' new Sidney, q. c., swings 17".	19"x 8' new Sidney, q. c., swings 21".
16"x 8' Hendy, q. c., taper attach.	20"x12' Hendy, q. c., taper attach.
16"x24' new Rahn Larmon, d. b. g., q. c.	25"x14' new Sidney, q. c., swings 27".

TURRET LATHES.

24" Davis chucking.	No. 1 Bardons & Oliver, screw.
60" Bullard, two heads.	64" Niles, two heads.

VERTICAL BORING MILLS.

PLANERS.

36"x36"x 8' Gray, two heads.	27"x23"x 6' Smith, one head.
30"x27"x 8' Smith, one head.	18"x 8"x 3' Wheeler, one head.

SHAPERS.

16" new Steptoe, b. g.	24" Hendy.
20" new Steptoe, b. g.	16" Bement, traveling head.
24" new Steptoe, b. g.	16" Barker, traveling head.

MILLING MACHINES.

No. 4 Brown & Sharpe, plain.	No. 15 new American, plain.
No. 3 Cincinnati universal.	No. 0 Steptoe, hand, new.
24"x7'x18 Oesterlein, plain.	

GRINDERS.

No. 1 Fraser universal, new.	No. 1 Landis internal.
No. 1 Grd. R., new cutter & reamer.	No. 190 Wells.

DRILLING MACHINES.

60" Bickford radial.	32" new Superior, sliding head.
48" Fosdick radial.	28" new Superior, sliding head.
36" new Superior, sliding head.	25" new Superior, sliding head.

SECOND-HAND MACHINERY

FOR SALE BY

Harris Brothers Company, - **35th & Iron Sts., Chicago, Ill.**

ENGINE LATHES.

17"x20' Linderman double spindle shell lathe.
18"x 6' Fay & Scott.
18"x12' New Haven.
20"x 8' Pond.
24" Potter & Johnston.

SCREW MACHINES.

Nos. 5-A & 6-A Potter & Johnston. | $\frac{1}{2}$ " Pratt & Whitney double spindle
1" Kemp Smith hand screw machine. | automatic.
 $1\frac{1}{2}$, 2" and 24" Cleveland automatics.

SHAPERS.

Pedrick & Ayer, open side, traveling head, 20" stroke.
30"x30"x 8' Putnam planer.

PUNCH PRESSES.

No. 4 Bliss, solid back, b. g.
Queen City, solid back, $5\frac{1}{2}$ " throat.
Queen City, solid back, $9\frac{1}{2}$ x9" horn.

SHEARS.

Weiner & Pels steel plate angle and I-beam shear, for 15" beams.
Single end shear, 22" throat, punches $1\frac{1}{2}$ " thru 1".
Single end shear, 11" throat, shear 8"x $1\frac{1}{2}$ ".
Double end punch, Long & Allstatter, 24" throat one side, 8" throat other
side, capacity 1" thru 1".
Alligator shears, 1 each for 1", 2" and $2\frac{1}{2}$ ".

DRILL PRESSES.

Bausch 8 spindle universally adjustable sliding head multi-spindle drill.
6 spindle Woodward & Rogers, $\frac{1}{2}$ " capacity.
20, 26 and 28" upright drills, (3).
2 spindle Hoefler adj. gang drill, No. 5 Morse taper in spdl's., table 18"x56".

BORING MILLS.

8' Michael vertical boring mill, single head on rail.

MILLING MACHINES.

New 48" swing No. 6 Becker latest model universal improved standard
vertical, (2).

BENDING ROLLS.

Power bending rolls, 10' long, for 3/16" plate.
Boilermakers' plate flanging clamp, 12' long.

PIPE MACHINES.

4" Armstrong pipe machine. | 4" Merrill pipe machine.

HAMMERS.

50-lb. Novelty trip hammer.

MISCELLANEOUS.

Bolt cutter, $1\frac{1}{2}$ " Landis, triple head.
Buffing stands, (20).
Cold saw, No. 21 Higley.
Cold saw, Q. & C., for 8" rounds.
Gate shear or multiple punch, 60" Queen City.
Gear cutter, 60" Niles semi-automatic spur.
Gear hobber, No. 5 Lees-Bradner.
Grinders, double end heavy floor, for 24x4" wheels.
Grinder, Middleditch combination drill and tool.
Hydraulic presses, 60 and 80 ton, vertical.
Keyseater, 1" Morton.
Nut tapper, No. 4 Rodd automatic.
Shear, Lennox serpentine.
Steel brake, Dreis & Krump, 10', for 18 gauge.

SECOND-HAND MACHINERY

FOR SALE BY

Stocker-Rumely-Wachs Co.,

117-121 N. Jefferson St., Chicago

In stock for immediate delivery.

DRILLING MACHINES.

Rockford bench drill.
14" Washburn sensitive.
14" Rockford sensitive.
Allen single spindle ball bearing.
Taylor & Fenn sgl. spdl. high spd.
16" Cincinnati.

20" Barnes all geared.
24" Fosdick radial.
3" Fosdick radial.
6" Gang radial.
14" Leland-Gifford 3-spindle.
12" Leland-Gifford 4-sp., b. b.

GEAR CUTTERS.

No. 2 Standard.
24"x 7" Gould & Eberhardt, for spur gears.
30"x 8" Gould & Eberhardt, for spur gears.
No. 3 Farwell gear hobber.

GRINDERS.

Greenfield universal tool and cutter.
No. 1 Cincinnati universal tool and cutter.
12"x48" Modern cylindrical.
16"x66" Landis plain.
No. 6 Modern, internal.
No. 7 1/2 Gardner, disc.

LATHES.

12"x 7' South Bend, c. r.
14"x 6' Flather, c. r., taper.
18"x 6' Bradford, c. r.
24"x12' Schumacher & Boye, c. r.
28"x18' New Haven, c. r.
32"x14' New Haven, c. r.
32"x18' Bradford, c. r.
37"x18' Fifield, c. r.

MILLING MACHINES.

No. 3 Chicago, hand, with vert. att.
No. 2 Cincinnati plain.
No. 2 LeBlond plain.
No. 5-C Becker, vertical, new.
No. 14 Pratt & W. 2-spindle profiler.
Eynon-Ingersoll slab miller.

PUNCHES AND PRESSES.

No. 3 Bauroth, o. b. i.
No. 3 Massillon, o. b. i.
No. 4 Loshbough-Jordan, o. b. i.
No. 54 1/2 Perkins sprue cutter.
No. 2-P American Can.
No. 16 Bliss horn press.
No. 2-A Bliss double crank geared press, 10" stroke.
No. 4-T American Can double crank geared press, 6" stroke.
No. 205H Toledo crank geared press, new, gap pattern, 96" bet. housings.
No. 3 Ryerson geared punch, 1 1/4"x1 1/4".
No. 7 Massillon, single end punch and shear, 36" throat, arch. jaws, capacity 1 1/4" thru 1", new.

SCREW MACHINES.

No. 2 Foster, plain head, a. c. & w. f.
No. 2 Acme, plain head, a. c. & w. f., power feed to turret.
No. 6 Warner & Swasey, geared friction head, a. c. & w. f., power feed to turret slide.
No. 6 Foster, friction, a. c. & w. f., power feed to turret.
No. 9 Bardons & Oliver geared friction head, a. c. & w. f., power feed to turret and cut-off slides.

MISCELLANEOUS.

Boring mill, 60" Bullard, 2 swivel heads.
Oil separator, No. 5 National, arranged for motor drive.
Hammer, 80 lb. Bradley cush. helve.
Shaper, 16" Baker, vertical.
Slitter, metal, Gray.
Tapping machines, No. 2 Garvin.

SECOND-HAND MACHINERY

FOR SALE BY

J. Horat,

417-423 Ferry St., LaFayette, Ind.

Automatic screw machine, 17" Cleveland, with five hole turret, jigger feed, countershaft, collets and feeding fingers, in good condition. Price, \$300.

Automatic screw machine, 17" Cleveland, five-hole turret, jigger feed, countershaft, collets and feeding fingers; in good condition. Price, \$200.

Automatic screw machine, 14" x 14" multiple spindle Gridley, with cams, tool holders, No. 36 Namco self-opening die holder, two sets of collets and stock pushers. Used only four months; good as new. Price, \$2,000.

Drill press, 30" Bickford, sliding head, in good condition. Price, \$100.

Lathe, 17" x 9" Perkins, plain rest and gears, 9/16" hollow spindle, large and small face plate, steady rest and countershaft; good condition. Price, \$300.

Motor, G. E., 5 h. p., a. c., 3 phase, 60 cycle, good as new. Price, \$90.

The above can be seen at our factory at LaFayette, Ind. Prices are net f. o. b. our factory. Terms one-third cash with order, balance sight draft with B/L attached.

FOR SALE BY

The Osborne & Sexton Machinery Co.,

Columbus, Ohio

LATHES.

9" to 13" Barnes, h. s., cp. r., new.

13-15-16 and 18 O. & S., h. s., c. r., new.

13" x 5' LeBlond, hollow spindle.

16x6 Seneca Falls rel. att., q. c.

18" x 8' Fitchburg, hol. spdl., cp. r.

TURRET LATHES AND SCREW MACHINES.

1" Garvin hand screw machine.

1 1/2" S. & K. hand screw mches., (3).

1 1/2" Tilted turret hand screw mche.

SHAPERS AND PLANERS.

14" Niles, traveling head.

16, 18 & 24" Barker, back gear crank.

16" Kelly crank, back geared.

20" Davis crank, pr. down feed.

20" Walcott geared shaper.

PRESSES.

No. 5 Garrison, o. b. i.

No. 2 Sidney o. b. inclinable, 1600 lb.

No. 32-P Toledo, nearly new, (4).

No. 32 Toledo geared.

DRILLS AND RADIALS.

Henry & Wright sgl. spdl., high spd.

8-spindle, gang, adjustable centers.

3 1/2" Canedy-Otto plain, new.

4" Baush plain, heavy pattern.

4 1/2" Universal, cone drive.

MILLING MACHINES.

No. 1 1/2 Valley City universal.

No. 4 Cincinnati plain.

No. 1 1/2 American plain.

GRINDERS.

12" x 36" Hartford, surface, new.

Landis 10x24 universal.

Litter 10x20 universal.

MISCELLANEOUS.

Balancing machine for pulleys.

Band saws, metal, 30" Wright, (2).

Boring mill, 12", 2 swivel heads.

Boring mill, 32" Baush, turret head.

Bulldozer, No. 25 W. & W.

Compressor, 8" x 8" H. & B. belt.

Cut-off machine, 3" Davis.

19" x 12" Gray, compound rest.

20" x 10" Hamilton, double back gear.

21" x 10" and 24" x 12" South Bend.

25" x 24" Fifield.

54" x 18" Pond, old style.

No. 6 W. & S. screw machine.

2x24 & 3x36 J. & L., dbl. equipment.

4" Hartford single spindle auto.

22" x 22" x 6" Gray, 1 head.

24" x 24" x 8" American, 1 head.

32" x 32" x 10" Niles, single head.

36" x 36" x 16" Pond, single head.

60" x 60" x 18" Betts, 3 heads.

Pneumatic, 20 ton, 37" bet. uprights.

Perkins, dbl. crank, 16x24 bolster.

Bliss, 42,000 lbs. toggle drawing.

Covington, 10' 6" between housing.

Sensitive 1, 2 & 3 spindle.

High speed sgl. spdl. Cleveland.

20" Aurora, with tap. attachment.

24", 26" and 28" sliding head.

Quint 6-hole turret drill.

No. 1 1/2 Valley City plain, new.

No. 3 Brainard, 30x7 table.

42" x 42" x 16" Lincoln slab miller.

30x10 Webster & Perks, univ., new.

Cutter, reamer and tool, new.

Cincinnati cutter and tool.

Hammer, 55 Williams White Justice.

Motor, 75 h. p., 220 volt, 3 phase.

Pipe machines, 2, 4 & 6" Oster, new.

Punch & shear, No. 3A Royersford,

double end.

Straightening rolls, 57" for 1/2 plate.

See Page 153 for our Special List.

SECOND-HAND MACHINERY

FOR SALE BY

Vonnegut Machinery Co., 43 S. Meridian St., Indianapolis, Ind.

RADIAL DRILLS.

3' Bickford.

3' Universal.

MILLING MACHINES.

24x24 Franklin, slab, (4).

24x6' Beaman & Smith, open side.

24x8' Beaman & Smith, open side.

No. 5 Brown & Sharpe, vertical.

Chicago hand millers, (5).

No. 3 Beck-Brainard, vertical.

Beaman & Smith, vertical slab.

No. 3 Garvin, hand.

No. 1-B Fox, (4).

GRINDERS.

9" Heald ring grinder.

8" Heald ring grinder.

No. 20 Landis plain.

No. 21 Landis plain.

Safety Emery Wheel Co. rotary surface, (2).

No. 10-L Besly, with ring wheels, (3).

No. 10-G Besly, disk.

15" Besly, ring wheel chucks, (4).

Walls duplex emery band & disk, (4).

No. 8 Ott plain, (25).

6x32 Norton, (3).

DRILL PRESSES.

28" Mechanics, sliding head, (3).

8-spindle multiple, round head.

22" American, sliding head, (2).

26" Barnes, sliding head.

23" Rockford, sliding head.

6-spindle Foote-Burt gang.

21" Rockford, sliding head.

20" Barnes, (2).

20" Superior, (2).

No. 1 Avey, single spindle, (35).

No. 2 Avey, single spindle, (8).

No. 1 Avey, bench, (36).

No. 3 Avey, (14).

No. 1-B Avey, (5).

No. 1 Sellow 2-spindle heads, (6).

ENGINE LATHES.

Cataract qk. chg. precision, (2).

14"x 6' Monarch, quick change, (5).

16"x 6' Monarch, quick change, (9).

15"x 6' Seneca Falls, (3).

16"x 6' Lodge & Davis, (3).

17"x 8' Fostick.

18"x 6' New Haven.

18"x 8' Blaisdell.

18"x 8' Reed.

18"x 6' Lodge & Davis, (4).

18"x 8' Whitcomb-Blaisdell.

18"x 8' Putnam.

20"x 8' Atlas, old style, (2).

20"x10' Rahn Larmon,

20"x10' Reed.

20"x17' Sellers, old style.

25"x18' Sellers, old style.

28"x12' New Haven.

32"x18' New Haven, old style.

36"x18' New Haven, old style.

38"x18' New Haven, old style.

TURRET LATHES AND SCREW MACHINES.

13" Gisholt.

21" Gisholt, gap.

24" Gisholt, gap.

24" Gisholt.

28" Gisholt.

20" Lodge & Davis.

20" Foster-Kimball.

No. 2 Warner & Swasey, (2).

2x24 Jones & Lamson.

14" Bardons & Oliver, (4).

No. 3 Pratt & Whitney.

AUTOMATICS AND SEMI-AUTOMATICS.

19" Potter & Johnston, (4).

Potter & Johnston, piston ring, (2).

No. 55 Acme, 4-spindle, (2).

2" Cleveland, 5 hole, (3).

1-1/16" Cleveland, 5 hole, (2).

1/2" Cleveland, 5 hole, (2).

1/4" Cleveland, 5 hole, (2).

MISCELLANEOUS.

Arbor presses, No. 2 Greenerd, (30).

Balancing mchs., 24" Defiance, (2).

Boring machine, 24" Binsse.

Hobbers, 20" Schuchardt & S., (2).

Keyseater, No. 2 Davis.

Motors, 10, 15, 20, 25 and 30 h. p.

Robbins & Myers, 220 v., a.c., (10).

Planer, 24"x24"x7' Pond.

Punch presses, No. 1 Toledo incl., (4).

Punch press, No. 3 Toledo incl.

Punch presses, No. 3 1/2 Toledo incl.

inclinable, (5).

Riveting hammers, No. 2-A hi-spd.

Shaper, 12" Walcott.

Slotter, 30"-18" stroke Betts.

Slotter, 30"-12" stroke Sellers.

Tapping mch., No. 2 Garvin vert.

Tap. mchs., 1/2" Rickert-Shafer, (12).

SECOND-HAND MACHINERY

FOR SALE BY

J. L. Lucas & Son, Inc.,

No. 3 Fox St., Bridgeport, Conn.

"You" want what you want when you want it.

DRILLING MACHINES.

No. 90 Burke.
24" New Haven.
28" New Haven.

Beaman & Smith horizontal boring,
drilling and milling machine.

GRINDERS.

Brown & Sharpe No. 2 surface.

Type D Diamond surface.

HAMMERS.

600 lb. Bliss, board.

200 lb. Farrel Foundry, rope.

500 lb. Mossberg & Granville, strap.

LATHES.

20" x 8' Roulsted, used, (12).
20" x 10' Fifeild.
30" x 12' Fifeild

48" x 20' Seth Wilmarth.
48" x 24' Putnam.

FOR SALE BY

Dale-Brewster Machinery Co., Inc.,

541-7 W. Washington Blvd., Chicago; 54-60 Lafayette St., New York

In Stock At Chicago

NEW

LATHES.

28" x 12' Wickes, d. b. g., q. c. g.
24" x 12' Chard, d. b. g., q. c. g.
20" x 11' Chard, d. b. g., q. c. g.
20" x 9' Chard, d. b. g., q. c. g.
18" x 9' Chard, d. b. g., q. c. g.
18" x 8' Cisco, d. b. g., q. c. g.

14" x 6' Cisco, s. b. g., q. c. g.
13" x 6' Lancaster standard.
13" x 5' South Bend standard.
12" x 4'6" Cleveland precision, (2).
6" x 30" Dalton bench, s. b. g.

DRILLING MACHINES.

36" Snyder, sliding head.
30" Snyder, sliding head.
28" Snyder, sliding head, (2).
25" Snyder, sliding head.
25" Silver, sliding head.
25" Snyder, stationary head, (8).
20" Canedy-Otto, p. f. b. g., (2).
20" Canedy-Otto, wheel and lever.
20" Silver, p. f., back geared.
20" Silver, wheel and lever, (2).
No. 101 Canedy-Otto radial, 34" arm.

14" U. S. sensitive.
14" Champion, (4).
Detroit 1-spindle, h. s., b. b.
Detroit 2-spindle, h. s., b. b.
No. 32-D Demco 1-spindle, h. s., b. b.
No. 32-D Demco 2-spindle, h. s., b. b.
No. 32-D Demco 3-spindle, h. s., b. b.
No. 30-A Demco, bench, h. s., b. b.
No. 22 Demco bench, h. s., b. b.
Various sizes and types bench drills.

GRINDERS.

No. 3 Modern universal, (4).
No. 1 Norton cutter and reamer, (3).
No. 2 Norton cutter and reamer.
Hacker "All-Angle" tool room.
No. 3 W. & M. surface grinder.
No. 1 LaSalle plain and surface.

16" x 14" Milwaukee wet tool.
24" Milwaukee wet tool.
No. A-1-T Grand Rapids, drill.
No. B-2-T Grand Rapids, drill.
Dumore grinders, 110-220.

MISCELLANEOUS.

Arbor presses, Atlas, all sizes.
Band saw, 10x10 Napier.
Filing mach., Barry, bench and floor.
Filing machine, motor driven, bench.
Gear hobber, No. 3 Farwell.
Hack saws, Peerless 9x9.
Miller, No. 1-A Fox plain, p. f.

Miller, No. 1-B Fox plain.
Miller, No. 2-A Fox universal.
Miller, No. 2-Land universal.
Punch press, No. 1 Rockford.
Punch press, Rockford style B.
Punch press, No. 4 Rockford.
Shapers, 16" Barker, (2).

USED

Boring mill, 42" King.
Cold saw, Higley.
Grinder, Wells tool room.
Grinders, Partridge, all sizes.
Millers, No. 2 Cleveland plain, (2).

Miller, No. 1 1/2 Rockford plain.
Miller, No. 1-A Milwaukee plain.
Punch press, No. 4 Walsh o. b. inc.
Saw, Racine No. 1.
Shaper, 16" Walcott.

SECOND-HAND MACHINERY

FOR SALE BY

Brown-McDonald Machinery Co., 2323 N. 9th St., St. Louis, Mo.
BORING MILL.

48" Bullard, vert., 1 plain & 1 swivel hd. on cross rail, face plate jaws, used.

LATHES.

13"x 6' South Bend, c. r., h. s., new.

13"x 6' Champion, c. r., h. s., new.

15"x 8' South Bend, c. r., h. s., new.

16"x 8' South Bend, c. r., h. s., new.

16"x 8' Walcott, q. c. g., d. b. g., c. r.,

h. s., new.

20"x10' Walcott, q. c. g., d. b. g., c. r.,

h. s., new.

16"x 8' American, q. c. g., used.

20"x10' Walcott & Wood, h. s., cpd.

r., used.

20"x8' Oakley, d. b. g., not screw

cutting, used.

14"x 6' Fitchburg, s. s., p. r., used.

14" Pierce, plain head, turret, new.

22" Davis, b. g. turret, used.

DRILLING MACHINES.

No. 1 Burke, bench, with chucks,

new.

14" Excelsior, 2 tables, new.

2 spindle Kern, b. b., cap. $\frac{3}{4}$ " 16"

swing.

3 $\frac{1}{2}$ " No. 101 C-O. radial new.

24" Dreeses simplex radial, with tap-

ping attachment.

20" Silver, s. b., w. & l., new.

20" Silver, s. b., b. g., p. f., new.

26" Aurora, b. g., p. f., new.

30" Prentice, s. b., s. h., p. f., used.

SHAPERS.

16", 20" & 24" Milwaukee, b. g., latest improved, new.

SCREW MACHINES.

No. 3 Smurr & Kamen, plain head, new.

No. 4 Smurr & Kamen, geared friction head, p. f. to turret, new.

Wood, Tilted Turret.

MILLING MACHINES.

No. 1 U. S. hand, vise and arbor, new.

No. 3 LeBlond plain, with dividing head, used.

No. 3B Owen plain, with vertical attachment and dividing head, used.

No. 3 Garvin, hand, used.

No. 2 Pratt & Whitney, Lincoln type.

PRESSES.

No. 1 Bauroth, o. b. i., new.

No. 3 Loshbough-J., o. b. i., new.

No. 4 Loshbough-J., o. b. i., new.

No. 3 Kohler, o. b. i., used.

SAWS.

Nos. 1 & 2 Marvel, draw cut, new.

No. 1 Racine high speed, new.

GRINDERS.

Nos. 1, 2 & 3 Western, d. e., new.

Nos. 1, 2 & 3 St. Louis, d. e., new.

No. 20 Safety E. W. Co., elec. (4).

U. S., electric, 110 v., d. c., bench.

Heald, ring, 8", used.

Essley, cylindrical.

No. 1 La Salle plain and surface,

new.

No. 2 Ohio, universal cutter & tool,

used.

COMPRESSORS.

Nos. 2, 3 & 4 Model B, vert., belted,

new.

Norwalk, steam, 1000 cu. ft., used.

6x6 Star vertical, belted, single cyl-

inder, double acting.

MISCELLANEOUS.

Brake, 6' Dreis & Krump, 16 ga.

Motor, 10 h. p. Wagner, 60 cy., 3 p.,

440 x., 850 r. p. m., used.

Pipe mch., No. 86 Forbes, 4", used.

Pipe machine, 3" Borden, hand.

Planer, 36"x36"x12' Patch, o. s., 1 hd.

on cross rail, 1 head on side, used.

Welder, spot, Toledo Electric, 220

volts, 60 cy., 12" arms, 18 ga., used.

Large stock of tinner's tools.

CHUCKS.

5", 7 $\frac{1}{2}$ " & 9" 3-jaw Sweetland, scroll,

new.

8" & 12" 4-jaw Sweetland, ind., new.

3", 6", 7 $\frac{1}{2}$ ", 9" 3-jaw Cushman, univ.,

used.

No. 18 National Acme, s. o., die hd.

12" 3-jaw Manufacturers Equipment

Co. air chucks, used.

16" 4-jaw Wescott, combination, cut-

ting off.

SECOND-HAND MACHINERY

FOR SALE BY

J. L. Osgood,

45 Pearl St., Buffalo, N. Y.

Chuckling lathe, 21" P. & J.....\$ 350.

Screw machine, No. 5 W. & S.\$ 375.

Screw machine, 11"x10" P. & W.

Shell cutting-off mche., 14" Williams

hexagon turret..... 250.

Turret lathe, 12" B. & S..... 200.

FOR SALE BY

B. C. Allen Machinery Co.,

104 S. Clinton St., Chicago

Band saw, metal.....\$ 125.

Lathe, speed, 12"x5'.....\$ 40.

Blower, No. 4 Buffalo..... 30.

Miller, No. 3 Burke, hand..... 150.

Bolt cutter, 14"..... 100.

Miller, No. 9 Kempsmith pl..... 750.

Brakes, 4' steel..... 60.

Miller, No. 14 Owen univ..... 1,100.

Chucks, 6, 10, 14, 16".....

Pipe machine, 2" Jarecki..... 135.

Drill press, 14" sensitive..... 35.

Pipe machine, Oster 6"..... 350.

Drill press, 14" high speed..... 150.

Punch press, No. 2 Walsh..... 200.

Drill press, 24" sliding head..... 125.

Punch press, No. 3 McDonald..... 250.

Drill press, 14" Barnes, new..... 600.

Punch press, No. 2, solid back..... 125.

Hack saws, (3).....

Punch press, No. 62 Ferracute..... 150.

Lathe, 13"x8" Barnes, c. r., c. f. 130.

Punch press, No. 53 Ferracute..... 425.

Lathe, 16"x8" Lodge & Davis..... 380.

Screw machine, 1" Pierce..... 425.

Lathe, 20"x10" L. & D., t. a..... 550.

Shaper, 6"..... 125.

Lathe, 20"x14" gap..... 850.

Shaper, 14" Steptoe crank..... 325.

Lathe, 32"x16"..... 250.

Shaper, 20" Milwaukee, b. g..... 850.

Lathe, hollow hexagon turret 1,000.

Square shear, 36" gap..... 150.

Lathe, 14" auto. turret..... 165.

Square sh., 10' Niagara, 20 ga. 250.

FOR SALE BY

The E. A. Kinsey Co.,

Cincinnati, Ohio,

Indianapolis, Indiana

DRILLING MACHINES.

20" Hoefer, b. g., p. f., sta. hd.

1/4" type BA-1 U. S. Electric 220 volts,

3/4" type T. U. S. Elect. 220 v., 60 cy.

60 cycle, 3 phase.

GRINDERS.

No. 60 Heald cylindrical.

Special tool, hd., iron tble. slide & c.s.

Single end. for tools.

Water tool, 26 in. wheel.

Spec. fixture fitted to 30" Bullard

Wesche electric buffing, a. c. motor.

mill, d. c. motor.

LATHES.

14x6 Monarch, 3 s. c., q. c., c. r., d. b. g.

19x10 Greaves & K., c. r., s. & f. r.

16x6 Lodge & S. q. c., d. b. g., t. a. b. s.

Potter & Johnston No. 3 mfrs. (10).

PLANERS.

24x24x6 American, hvy. pat., rebuilt.

48x48x16 Am. hvy., 2 hds. c. r., 1 hd.

26x26x12 Am., 2 hds. on cross rail.

each housing.

40x30x14 Am. hvy., 2 hds., pr. elev.

72x72x31 Pond, 2 hds. on cross rail.

32x32x8 New Haven.

18" Niles-B.-P. plate, 1/4" steel plate.

48x36x14 Am. hvy., 2 hds., rebuilt.

TURRET AND SCREW MACHINES.

No. 1 Am. Tool & M. Co., sq. ar., s.

Cleveland automatic, 3/4" spdle. hole.

b. g., 4 s. c.

3x36 Jones & Lamson flat turret.

20" No. 7 Bardons & O., g. fr. hd.

No. 2 Warner & Swasey, (2).

No. 4 Brown & Sharpe, w. fd., (8).

MISCELLANEOUS.

Abrasive metal cutter, 12" Peters.

Tapping machine, Garvin No. 1.

Band saw, 36" Towsley, with motor.

Tapping mches. spec. hor. friction,

Centering att., Carroll No. 2, cap. to 2".

double end (2).

Chain machine, Cross & Spiers.

Saw bench, Beach, table 36x54".

Chuck, 12" universal.

Spec. fix. for gas engine flywheel for

Gear hobber, 18" Gould Eberhardt.

42" King vertical boring machine.

Oil pump, Trahern No. 1 F. rotary.

Special internal grinding fixture

Profiler, Pratt & W. No. 12, belt.

Brown & S., for No. 1 universal.

Riveter, 3-16" Schuster, on ped.

Vise, flanged, Brown & Sh. No. 4.

SECOND-HAND MACHINERY

FOR SALE BY

Russell Machine Company, 28th St. & A. V. R. R., Pittsburgh, Pa.
LATHES.

48" Niles car wheel, m. d.
48"x16" turning lathe, c. r., sgl. gd.
46"x33" Fifeild, triple geared.
46"x21"6" Fifeild, triple geared.
38"x25" New Haven, raised to 56".
24"x16"6" Johnson lathe.
20"x12" Prentice, h. s., c. r.

20"x8"6" Walcott, q. c. g., (3).
16"x10" Sebastian, h. s., c. r.
16"x 8" Porter, h. s., c. r.
16"x 6" Blaisdell, h. s.
14"x 8" American speed lathe.
16"x 5" Jones-Lamson turret lathe.
24"x11" American semi-auto. turret.

PLANERS.

24"x24"x8" Lodge & Davis, 1 head.
24"x24"x8" Chandler, one head.
36"x36"x12" Pond, three heads.

48"x48"x20" Gray, 4 heads.
72"x48"x16" Pond, 2 heads.
80"x72"x20" Thurston-Gardner, 1 hd.

DRILLS AND BORING MILLS.

Burke sensitive bench Nos. 0 & 1.
14" Woodward-R. sensitive bench.
No. 3 Prentice port. rope drive drills.
No. 22 Silver, new, h. p. post.
20" Silver, new, plain and bk. gd.
20" Foote-Burt mfrs. vertical.
24" New Haven plain drill.

24" Hamilton, b. g., sliding head.
30" Hamilton, b. g., sliding head.
36" Gould & Eberhardt, tap. attach.
4" Fossdick plain radial, tap. attach.
4" Bickford plain radial, tap. attach.
Garvin 4 spindle drill press.
48" Niles car wheel boring mill.

HAMMERS, BULLDOZERS AND MILLERS.

7000 lb. Morgan double leg steam.
800 lb. Bement-Miles sgl. leg steam.
Bradley cushion helves, 40 lb. & 80 lb.
Bradley 100 lb. upright helve.

Little Giant 50 lb. power hammer.
No. 2 Brown & Sharpe plain miller.
Williams-White bulldozers, No. 6.

ENGINES, BOILERS AND PUMPS.

5"x5" Erie vertical steam engine.
8"x8" Lane horizontal steam engine.
4 h. p. Fowler vertical gas engine.
40 h. p. Backus horiz. gas engine.

50 h. p. White-Middleton gas engine.
50 h. p. vert. submerged tub. boiler.
6 h. p. vertical single flue boiler, (4).
Pumps, various sizes and makes.

PUNCHES, SHEARS AND PRESSES.

50" throat Reade sgl. end punch and shear; massive construction.
No. 8 L. & A. geared s. e. punch, 34" throat.
Industrial d. e. punch and shear, 12" throat.
Ohi hd. power punch and shear, cap. to punch about 1 1/2"x1 1/2", shear 6"x1 1/2".
Peck, Stow & Wilcox squaring shear, foot pwr., cap. 16 gauge, 32" knife.

Niagara No. 24 hand punch, 15" thr.
Bliss geared slitting shear, 18" thr.
Perkins No. 2 rotary shear, 12" thr.
No. 56 abl. housing knuckle press.
No. DG-76 Ferracute single acting press.
No. 34 Greenard arbor press.
No. 4 Stevenson foot pwr. press, 6" throat.
No. 594 Toledo drawing presses, (2).

MISCELLANEOUS.

Air compressor, s. cyl. 3x5", belted.
Air compressor, double cyl. 2 1/2"x4".
Air comp., Au-To No. 0, cyl. 4"x5".
Air compressor, 6x6 Laidlaw hor.
Air compressor, 81" Blaisdell single cyl. horizontal.
Belting, various widths and lengths, leather.
Blower, pressure, No. 0 Sturtevant, 3 1/2" outlet.
Blower, pressure, No. 3 Sturtevant, 9" outlet.
Blower, Sturtevant No. 3 Monogram.
Blower, Champion No. 4, fan or vol.
Blower, Buffalo No. 8, pressure.
Bolt cutter, 14" Kenyon.
Brazeing table, all iron, 17"x29 1/2"x31".
Cold saw, Gliem, 22" dia., cap. 6" rd.
Cold saw, Newton, 30" dia., cap. 5 1/2" rd.
Crane, 10" I-beam, 12'3" span, with Harrington 6,000 lb. chain hoist.

Crane, traveling, 10 ton Pawling & Harnischfeger, 3 motor, 60' span, 220 v., d. c.
Grinder, Landis, 26"x96".
Grinder, 10" double end emery, on column.
Grinder, Diamond 12" d. end bench.
Grinder, Russell 12" dbl. end bench.
Grinder, Lancaster 16" d. e. emery.
Grinder, Barnes 20" wet tool.
Grinder, 20" Ransom wet tool, 250 volt, d. c.
Keyseater, 18"x2", No. 2 Baker.
Lathe, wood, 18"x8" Chapman.
Pipe mch., 6" Curtis, engine driven.
Polishing stand, Diamond No. 2.
Polishing stand, d. end, 42"x1 1/2" arbor.
Polishing stand, Cuyahoga dbl. end.
Rip and cut-off saw, 30"x38" Badger.
Shaper, 24" Hendey, fr. gd.
Silent chain belt, 16"x8"x1 1/2" p.
Vises, Forges, Tanks, Lockers.

SECOND-HAND MACHINERY

FOR SALE BY

H. D. Warner,

57 May St., Hartford, Conn.

SHOP FURNITURE.

1,000 Hart & Hutchinson steel lockers.

300 Steel stools with backs.

20,000 Steel tote boxes, various sizes.

FOR SALE BY

The O'Brien Machinery Co.,

119 N. Third St., Philadelphia, Pa.

Gear shaper, 36" Fellows.

Grinders, Pratt & Whitney vertical surface, (2).

Grinder, Gisholt, cutter.

Hammers, 50 lb. upright belt, (2).

Lathe, 16"x9" Lehmann.

Lathes, new 18"x8" Rockford, (5).

Lathe, 18"x9" Lehmann.

Lathe, 26"-48"x14" McCabe dbl. sp.

Lathe, 85"x18" Bement.

Planer, 24"x24"x 6" N. Y. Safety.

Punch and shear, sgl. end new, cap.

4x5 flat, 1" rd., punch 5/8" in 5/8" iron.

Punch, single end, 32" throat, Hilles

& Jones, cap. 1 1/2" hole in 1 1/2" iron,

No. 4 type.

Press, No. 2 Henderson solid back, weight 3300 lbs.

Punch and shear, dbl. end new, cap, punch. 5/8" in 5/8"; cap. shear, 1 1/2 rd., 5x5 flat; weight 3,600.

Punch press, power, deep throat.

Rifling mch., horiz. boring or rifling, wt. about 10,000 lbs.

Saw, heavy type, cold.

Shaper, 12" Bement.

Shaper, 15" Smith & Mills.

Shaper, 16" Smith & Mills, b. g.

Shapers, 24" Hollingsworth, b. g.

Spinning lathe, 44" swing, hvy. duty.

Turret lathes, 3"x36" Jones & Lam-

son, flat (3).

FOR SALE BY

The Strong, Carlisle & Hammond Co., Cleveland, O., Detroit, Mich.

ENGINE LATHES.

14"x 6" Blaisdell, r. & f. rest.

14"x 6" Flather, p. r.

18"x10" Springfield, c. r., 5-step cone.

18"x10" LeBlond, c. r. & t. a., 5-step cone, (2).

16"x 6" Goddard, r. & f. rest.

14"x 6" Flather, c. r., 4-step cone.

22"x12" Walker, p. r., with raising blocks.

TURRET LATHES.

24" Davis turret boring & chucking lathe, with vert. forming attach.

14" Lodge & Davis, plain head.

SCREW MACHINES.

No. 00 Brown & Sharpe automatic.

No. 33 New Britain multiple spindle automatic.

2" Hartford full automatic.

1" Pratt & Whitney screw machine complete.

GRINDERS.

Warner & Swasey cock grinder.

Type "DE" Hisey-Wolf internal.

Greenfield univ. cutter & reamer.

20" Whitney wet tool.

HAMMERS.

Coffman, post, power dr., 25 lbs., c. s.

100 lb. Cady, belt drop, c. s.

GEAR CUTTERS.

No. 2 Whiton automatic.

26" No. 3 Brown & Sharpe auto.

36" Fellows gear shaper.

MISCELLANEOUS.

Arbor press, No. 2 Greenerd.

Cold saws, 12" Burke, (2).

Cold saw, Higley.

Drill, 5 spdl. Detroit semi-auto.

Drill, sgl. spdl. Leland, ball bearing.

Filing machine. Simplex.

Keyseater, Mitts & Merrill, square frame.

Lathe, Resek, double end.

Punch, foot power.

Punch press, No. 20 Bliss plain fly-wheel.

Saw sharpener, No. 10 Cochrane-Bly automatic.

Shears, 30" Niagara foot-power squaring.

Shear, 62" Niagara No. 363 power squaring.

SECOND-HAND MACHINERY

FOR SALE BY

Simmons Machine Co., Inc., Albany, N. Y.
1001 Singer Bldg., New York **358 Ellicott Square, Buffalo**
804 Dime Savings Bank Bldg., Detroit

Partial List of Equipment for Immediate Delivery

MILLERS.

No. 2 Owen plain.	No. 3-B Owen plain.
No. 3-H LeBlond universal, new.	No. 1 $\frac{1}{2}$ Cincinnati, plain.

GRINDERS.

No. 5 Brown-Sharpe universal.	No. 3, 4, 5, self-contained c. s. new, (2).
No. 23 Brown-Sharpe internal.	Springfield wet grinder.
No. 2 Norton universal tool-cutter.	4", 5", 1" and 1 $\frac{1}{2}$ " emery stand.
Dumore electric, new, (8).	

LATHES.

14"x 5' Putnam.	28"x12' Boye & Emmes.
14"x 6' Lodge-Shipley.	30" English lathe.
18"x 6' American.	34"x18' Pond.
20"x 8' American.	38"x14' David W. Pond.
20"x 8' Fitchburg.	42"x12' Fifield, triple geared, (3).
20"x 8' Pond.	2 $\frac{1}{2}$ "x36" Marvel lathes, (3).
20"x10' Monarch, new.	

PLANERS.

26"x36"x8' Pond, two heads.
 Used 38"x38"x8'6" Planer, one rail head, one side head.
 Reliabuilt 30"x33"x10 Cincinnati, one head.
 New 42"x42"x12' openside, one rail head, one side head.
 Reliabuilt 60"x48"x13' Lincoln, 4 heads, Sellers spiral gear drive.
 Reliabuilt 73"x48"x13' Lincoln, 4 heads, Sellers spiral gear drive.
 Used 14' Hilles-Jones plate planer.

DRILLING MACHINES.

Moline "Hole Hog", (3).	3-spindle Sipp high speed sensitive.
3' Drees plain radial.	26" Barnes, sliding head, (3).
5' Bickford radial.	U. S. portable electric radial.
6' Prentice radial.	No. 101 Canedy-Otto 3 $\frac{1}{2}$ ' radial, new.
36" Snyder.	No. 1 Burke bench drills, new, (3).
7'3" Warren semi-universal radial.	

AUTOMATICS.

2" Cleveland Model "A" 5-hole turret, (2).	4" National Acme auto., four spdl.
2" Cleveland auto., 5-hole turret, (2).	No. 55 National Acme auto., (2).
	No. 52 National Acme automatic.

SCREW MACHINES AND TURRET LATHES.

3"x36" J. & L., bar and chuck., (2).	20"x8' Bridgeport turret lathe.
No. 32 $\frac{1}{2}$ Garvin turret lathes, (4).	Conradson turret lathe, 24" swing.

BORING MILLS.

37" Niles, two heads.	34" King vertical, swing 36".
36" Bridgeport, with two heads.	48" Niles car wheel borer.

MISCELLANEOUS.

Arbor press, Greenerd No. 5.	Presses, power, Nos. 1, 2, 3 Sidney, new, (2).
Broaching mch., No. 2 J. N. Lapointe.	Presses, foot, Perkins, (2).
Dictaphones—Ediphones (8), and 1 shaving machine with motor.	Saw, 4" Cochrane-Bly.
Gear cutter, No. 2 Whiton.	Shear, Lennox rotary bevel.
Hack saws, No. 1 Racine hi-spd., (8).	Shear, 36" Q. C. power squaring.
Pipe machine, 2" Jarecki No. 7.	Shear and punch, 24" Niagara deep throat, hand lever.
Pipe machine, 8" Cox.	

WOOD-WORKING MACHINERY.

Band saw, 36".	Sander, vertical.
Borer, universal.	Sander, 3-roll drum, Fay & Egan.
Jointer, 16" Greaves-Klusman.	Shaper, 2 spindle.
Planer, pony, 24".	Swing saw.
Router, New Britain No. 2 chain.	

SECOND-HAND MACHINERY

FOR SALE BY

Chas. Molitor Machinery Co.,

124 S. Clinton St., Chicago, Ill.

Special Bargains

Miller, No. 2 Brown & S., pl., b. g.
Miller, No. 3 Brown & S., pl., b. g.
Presses, Nos. 0, 1, 2, 3, 4 and 5 incline punch presses.
Presses, large variety kick.
Shaper, 16" Rockford geared crank.

Shaper, 18" Barker geared crank.
Shaper, 25" Milwaukee grd. crank.
Shears, 6' & 8' power square.
Shears, 6' & 10' power square.
Spot welder, Toledo, 250 amp.

FOR SALE BY

Badger-Packard Mchy. Co., 133-139 W. Water St., Milwaukee, Wis.

LATHES.

16"x8' Flather, quick change.
18"x8' Cincinnati, quick ch., s. b. g., 4-step cone.
18"x8' Fifield, loose chg., s. b. g., 4-st. c.

18"x10' Blaisdell, c. r., solid spdl.
24" Pond rigid turret lathe.
24" Davis, friction b. g. turret head, boring and chucking lathe.

MISCELLANEOUS.

Air compressor, 8"x8" class N-SB Chicago horizontal.
Blower, No. 50 Connorsville positive pressure, with t. and l. pulleys.
Drill, 24" sliding hd. Sibley, b. g., p. f.
Grinder, No. 2 B. & S. univ. cyl.
Grinder, 72" Holmes auto. knife.
Grinder, 12"x42" No. 3 Landis univ.
Grinder, No. 3 Oesterlein "Ohio" universal and tool.
Hammer, Star upright power, 35 lb.
Keyseater, No. 2 Mitts & Merrill "Giant," with equipment.
Milling mch., No. 6 Brainard, Lincoln type, pwr. longitudinal feed.

Planer, 24"x24"x16' Fitchburg.
Oven furnace, No. 1 Stewart, with blower.
Oven furnace, No. 27 Stewart, without blower.
Punch, style M Badger rapid action, 6" throat, 8"x34" cap.
Rivet spinning machine, Grant, 110 v., d. c. motor driven, 3/16" cap.
Screw mch., 7"x34" Hartford auto.
Screw machine, 14" Cleveland auto.
Screw mch., 24"x44" Hartford auto., with c. s.
Screw mch., 14"x17" Hartford auto.

FOR SALE BY

Niles-Bement-Pond Company,

111 Broadway, New York

Located at Chicago, Boston and New York

LATHES.

15"x 7' P. & W. speed lathe.

16"x 8' VonWyck, quick change.

TURRET MACHINES.

4" 4-spdl. old style Acme auto.
4" Spencer single turret automatic.
2"x24" Jones & Lamson, cone head.

24" size I Gisholt, 220 v., d. c., m. d.
28" Milwaukee turret lathe.

PLANERS.

30"x30"x 6' Pond, 2 heads.
30"x30"x 8' Pond, 2 heads.
30"x30"x10' Pond, 2 heads.

72"x54"x10' Pond.
72"x72"x18' Pond.

DRILLING AND BORING MACHINES.

60" Niles gooseneck drill.
14" 4-spindle turret drill.
17" 4-spindle gang drill.
3' Grant radial drill and boring mch.

Radial, 5' Niles semi-univ.
Radial, 6' Niles semi-univ.
2" sp. old style horizontal boring and drilling machine.

MISCELLANEOUS.

Blower, steel pressure, No. 10 Sturtevant.
Boring mill, horiz., 4 1/2" spindle, 9' table, Bement.
Gear cutter, spur, 42" Bement.
Gear planer, bevel, 42" Gleason, old style.

Grinder, wet saw, No. 1 Tindel.
Grinder, cutter, No. 1 Cincinnati.
Grinder, wet, dbl., 24" cup wheels.
Grinder, 10x66 No. 4 Landis univ.
Miller, No. 3-H LeBlond universal.
Saw, cold, P. & W., 8" capacity.

SECOND-HAND MACHINERY

FOR SALE BY

Herman L. Winterer,

943-53 N. Front St., Philadelphia, Pa.

LATHES.

31"x14' Niles, back geared, (2).
20"x 8' Putnam.
19"x 8' LeBlond.

18"x 8' Pond.
16"x 6' Prentice, q. c. g.
And many others.

TURRET LATHES.

3"x36" Jones & Lamson, (2).
18" Gisholt.

7"x14" Potter & J. semi-auto., (2).
27" Chucking lathe.

DRILL PRESSES.

48" Universal radial.
40" Barnes horizontal radials, (2).
36" Bickford radials, circular base,
motor driven, (2).

28" Snyder vertical, (2).
20" Baker high speed, heavy duty, (3).
Style F Baker.

MISCELLANEOUS.

Boring mill, 38" Beaman & Smith.
Grinder, disc, No. 17 Besly.
Grinder, No. 14-12"x5' B. & S. plain.
Grinder, tool room, Heald univ.
Grinder, roll, 54"x10 1/2" Diamond.
Milling machine, No. 5B Becker-
Brainard.

Milling machine, No. 1 Garvin univ.
Milling mch., No. 2A Kemp Smith.
Milling machine, Whitney, hand.
Presses, No. 534 Max Ams arch, 5"
stroke, (5).
Press, Waterbury-F. horiz., 3" stroke.
Press, No. 2 1/2 Ferracute.
Presses, assorted sizes, (20).

Milling machine, No. 15 Garvin.

BOILERMAKERS' AND SHIP MACHINERY.

Flanging press, 100-150 ton, with extra knockout plunger, platens 7'2" long
and 4'2" wide, practically new.
Shear, 24" Hans Kraut beam, cuts from 3 to 24" beams, H. columns, chan-
nels and shapes, practically new.
Steam hammer, Dudgeon, 1,500 lb. capacity.

Large assortment of General Machinery.

Send for complete list.

FOR SALE BY

Wm. C. Johnson & Sons Machinery Co.,

1001-3-5 N. Sixth St.,

St. Louis, Mo.

LATHES.

14" 6' Hendey.
14"x 6' Lodge & Shipley.
15"x 6' Von Wyck.
14"x 6' Whitcomb-Blaisdell.
18"x 8' American.

20"x 8' Rahn & Larmon.
22"x22" old style.
28"x16" LeBlond.
3"x36" Jones & Lamson.

SHAPERS AND PLANERS.

12", 14", 16", 20" and 24" shapers.
14"x14"x20" planer.

36"x36"x8' Hamilton planer.

DRILLING MACHINES.

16" Elmore high speed.
24" Henry & Wright, high speed.
20" Barnes.

22" Barnes, sliding head.
4' arm Bickford radial, almost new.

MILLING MACHINES.

No. 3 Burke, bench.
No. 0 Bickett, vertical.
No. 2 Knight, vertical.
Fox hand miller.

No. 2 LeBlond, plain.
28" Cincinnati, semi-automatic.
No. 2 Pratt & Whitney, Lincoln.
No. 2 1/2 Rockford, universal.

MISCELLANEOUS.

Bolt cutter, 1 1/2" Acme.
Bolt cutter, 1 1/2" National.
Bolt header, 1 1/2" Blakeslee.
Bulldozer, No. 3 Fisher.
Fox Monitor lathe, Lodge & Davis.
Gear cutter, 28" Cincinnati.
Grinder, No. 38, plow-share.
Hammer, 40 lb. Bradley.
Hammer, steam, 250 lb. Morgan.

Hammer, steam, 250 lb. Bement-M.
Pipe machine, 6" Forbes.
Press, No. 40 Swaine, arch.
Press, No. 42 Toledo, horn.
Punch & shear, double end, cap. 1 1/2"
in 1", has two 25" throats.
Screw machine, 1 1/2" Pratt & Whitney.
Upsetting machine, 1 1/2" Waterbury-
Farrel.

SECOND-HAND MACHINERY

FOR SALE BY

P. O. Box 976,

Hartford, Conn.

Bargains for immediate acceptance.

These machines are in good order and will be taken down, skidded, slushed, small parts boxed and delivered f. o. b. Hartford, at the following prices:

Drill, upright, 26" New Haven No. 67.....	\$ 250.
Drill, upright, 36" New Haven No. 76.....	575.
Drill, 2-spindle, 14" W. & R. No. 78.....	65.
Lathe, 16"x54" Nicholson & Waterson No. 55.....	125.
Lathe, speed, 10"x4" No. 49.....	75.
Lathe, small wood turning, 12"x3" No. 130.....	35.
Tapping machine, upright, W. & R. No. 133.....	40.
Tapping machine, horizontal, W. & R. No. 00, cap. 0 to 1/2", new.....	125.

FOR SALE BY

H. D. Warner,

57 May St., Hartford, Conn.

Automatics, No. 00 B. & S., (6).
Automatics, No. 0 B. & S., (6).
Automatics, No. 2 B. & S., (6).
Automatic, 14" Cleveland.
Automatics, 3 1/2" Cleveland, (2).
Automatic, 11 1/2" Gridley mult. spdl.
Boring & milling mch., Beaman & S.
Broaching mchs., No. 2 Lapointe, (3).
Drill press, 4-spdl. Norton & Jones.
Drill press, 4-spindle Barnes.
Forming machine, No. 00 B. & S.
automatic turret.
Gear hobber, Gould & E., 24"x10".
Grinder, No. 2 Landis universal.
Hammer, steam, 600 lb. Niles-Bement-Pond, nearly new.
Hammer, steam, 1,000 lb. Niles-Bement-Pond, nearly new.
Hammers, steam, 1,200 lb. Niles-Bement-Pond, nearly new, (2).
Header, 3/4" Acme hot bolt.

Hammers, board lift drop, 400 lb. Billings & Spencer, nearly new, (6).
Hammers, board lift drop, 600 lb. Billings & Spencer, nearly new, (7).
Header, No. 00 Manville, s. s., s. d., nearly new.
Header, No. 00 Manville, d. s., s. d., nearly new.
Headers, No. 2 Manville, s. s., stove rod, nearly new, (2).
Lathe, J. & L., sliding head 2"x24".
Millers, Becker No. 7-H Lincoln, (6).
Millers, P. & W. No. 2 Lincoln, (6).
Millers, No. 2 Becker vertical, (4).
Press, No. 77 1/2 Bliss.
Press, embossing, No. 26 Bliss.
Press, embossing, No. 27 Bliss.
Profilers, P. & W. 2-spindle, (4).
Screw machine, No. 3 P. & W., hand.
Shear, alligator, to cut 1 1/2" square cold steel.

FOR SALE BY

W. J. Baird Machinery Co.,

265 Jefferson Ave., Detroit, Mich.

Boring mill, Lambert horizontal, 3" bar, new.
Boring and facing mill, Beaman & Smith 2-spindle horizontal, used.
Drill press, 24" Aurora, sliding head, back geared, power feed.
Grinder, No. 2 Bath universal, complete, used.
Grinder, automatic surface, No. 2 Wilmarth & Morman, new.
Grinders, double end disc, 18" No. 7 Valley City, new, (2).
Grinder, No. 1 Fraser universal, complete with internal grinding attach., new.
Miller, No. 2 Rockford universal, high-powered, all-gear, new.
Miller, No. 2 1/2 Rockford universal, high-powered, all-gear, new.
Planer, 22"x22"x5' Wheeler, second-hand but in good condition.
Planer, 30"x30"x8' Gray, used.
Planer, 36"x36"x20' Gray, used.
Planer, 42"x42"x10' Davis & Egan, used.
Punch press, power, No. 3 Loshbough-Jordan, open back inclinable.
Punch press, power, No. 5 Loshbough-Jordan, open back inclinable.
Punch press, power, No. 5 Loshbough-Jordan, geared, open bk. inc., new.
Screw machine, 3/4" Cleveland automatic, 5-hole turret.
Screw machine, 2 1/2" National Acme 4-spindle automatic.
Screw machine, hand, 1/2" Mullholland.
Shaper, 24" Hollingworth, back geared crank.
Shapers, 28" Queen City, helical cut, back geared crank, (2).

SECOND-HAND MACHINERY

FOR SALE BY

Peninsular Machinery Co., 281 E. Jefferson Ave., Detroit, Mich.

Drill, 10" Hofer, friction disc.
 Drill, 20" Rockford, back geared.
 Drill, 23" Rockford, back geared.
 Drill, 24" Rockford, sliding head.
 Drill, 24" Fosdick radial.
 Drill, Pierle high spd. ball bearing.
 Grinder, No. 1 LeBlond univ. cutter.
 Grinder, No. 2 Grand Rapids, drill and tool.
 Grinder, No. 1 Blount, double end emery.
 Grinder, No. 6 Blount, d. e. emery.
 Groover, No. 3 Niagara.

Lathe, 11"x 4' Blount speed.
 Lathe, 14"x 6' LeBlond engine.
 Lathe, 16"x 6' LeBlond engine.
 Lathe, 17"x 8' LeBlond rap. produc.
 Lathe, 17"x10' LeBlond automobile.
 Lathe, 18"x 8' LeBlond engine.
 Lathe, 20"x10' LeBlond engine.
 Miller, No. 24 LeBlond universal.
 Miller, No. 3H LeBlond universal.
 Planer, 24x24"x6' Rockford, sgl. hd.
 Planer, 28x28"x8' Rockford, sgl. hd.
 Shaper, 16" Rockford, back geared.
 Shaper, 20" Rockford, back geared.

FOR SALE BY

E. L. Esley Machinery Co., 551-557 Washington Blvd., Chicago, Ill.

DRILL PRESSES.

5' Niles full universal radial.
 No. 24 Avey single spindle.

28" Aurora, sliding head.
 No. 11 Natco multiple drills, (2).

GRINDERS.

No. 1 Cincinnati, universal.
 No. 1 Norton full univ. tool & cutter.
 No. 190 Wells cutter and reamer.

6"x32" Norton plain.
 No. 2 Bath universal.
 No. 1 Besly disc.

LATHES.

11"x 5' Star.
 13"x 6' Sebastian.
 16"x 8' Von Wyck, taper att.
 18"x 8' Bradford, q. c. g., taper att.

20"x 8' Hamilton.
 22"x12' Greaves & Klusman.
 24"x12' Prentice Bros.
 36"x14' Bradford.

SCREW MACHINES.

No. 60 Brown & Sharpe auto. (2).
 1" Cleveland automatics, (2).
 No. 5 Pearson, hand, fric. head.
 No. 1 Foster, plain head, cap. 13-16".

1"x4" Acme, plain head.
 No. 4 Foster, plain head.
 No. 224 Garvin, 17-16" cap., fric. hd.
 1" Smurr & Kamen, plain head.

MISCELLANEOUS.

Bolt cutter, 3-spindle 1" National.
 Boring mach., 33" Binsse horizontal.
 Boring mill, 36" Bullard.
 Boring mach., No. 0 Fosdick.
 Broaching machine, No. 3 Lapointe.
 Cold saw, No. 114 Higley.
 Gear cutter, No. 12 B. & S. auto.

Miller, vert., No. 4 Becker-Brainerd.
 Miller, No. 1-B K. & T. univ.
 Planer, 32"x32"x12' Davis & Egan.
 Planer, 42"x42"x8' Whitcomb.
 Punch, No. 16C New Doty, sgl. end.
 Punch press, No. 76 Toledo, o. b.
 Turret lathe, 2"x24" J. & L.

Second-Hand Wood-Working Machinery

For a large list of used wood-working machinery, consult the **Wood-Working Machinery List**, a publication similar to this but devoted to the advertising of saw-mill and wood-working machines. A copy may be had on application to the publisher, **A. H. Hitchcock, 1220-1235 Caxton Building, Chicago, Ill.**

Second Hand Machinery

DRILLING MACHINES.

No. 117 Moline "Hole Hog" heavy pattern single spindle, (2).
Four spindle Allen high speed ball bearing sensitive.

ENGINE LATHES.

15"x6" Johnson, comp. r., taper.	24"x7" with turret on shears.
16"x6" Finfield, rise and fall rest.	24"x12" Reed, compound rest.
20"x13" New Haven, comp. rest.	32"x16" Fay & Scott, c. r., turret
21"x10" LeBlond crankshaft, (2).	on shears, turret tool post.

SHAPERS.

12" Springfield, plain crank.	16" Steptoe, plain crank.
12" traveling head.	

TURRET LATHES AND SCREW MACHINES.

3"x36" Jones & Lamson flat turret, with bar equipment.
3" Cleveland automatic.
4" Hartford automatic.
14" Hartford automatic.
14" Gray back geared turret lathe, with pan.

MISCELLANEOUS.

Cold saw, 12" Burke.	Punch and shear, No. 1-A New
Pipe machine, 3" Stoever.	Doty.
Grinder, No. 1 Challenge.	Punch & sh., No. 10 New Doty.

Marshall & Huschart Machinery Co.

17 S. Jefferson St., Chicago, Ill.

915 Chemical Bldg., St. Louis, Mo.

Some Real Bargains

Milling Machines

No. 3 LeBlond plain, used 30 days on tool work, good as new.
No. 3 Cincinnati plain, good condition.
No. 3 Cincinnati universal, good condition.
No. 14 Kearney & Trecker pl., with 5 H. P. Motor, good condition.

Crank Shapers

24" Gould & Eberhardt, b. g. crank, good condition.
24" Hollingworth b. g. crank, good condition.
16, 20 & 24" Ohio, b. g. crank, new, one each.
16" Hamilton, s. g. crank, good condition.

Lathes & Turrets

24"x12" LeBlond, taper att., 24" ind., chuck; with everything used on tool work.
1 Each 13, 17, 19, 25 and 27" Sidney, quick change, 3-step cone, dble. back gear, 6", 8", 10", 12" and 14" beds.
24" Gisholt turret; chucking equipment.

Punches & Shears

60" H. & J. horiz., cap. 34"x1"	74" No. 2 Royersford, double
50" McCabe, sgl. end, cap. 2"x1"	end, cap. 3"x1"
50" Reade, sgl. end, cap. 14"x1"	1 Each, 4", 5" & 6" throat, single
36" McCabe, sgl. end, cap. 2"x1"	end, cap. 3"x3"

Over 500 Machines on our floor. Send us your inquiries.

WAYNE MACHINERY CO., Fort Wayne, Ind.

Branch Store, 18 W. 2nd St., Dayton, Ohio

ReMANUFACTURED - (ORIGINATED BY US) - MACHINE TOOLS

FOR QUICK SHIPMENT

At Chicago—The Great Machinery Center

LATHES

- 1-13"x 8' Prentice.
- 1-13"x 6' Willard.
- 1-14"x 6' Putnam.
- 1-14"x 6' Rockford.
- 2-14"x 6' Flather.
- 1-60"x16' Fifield.

RADIAL DRILLS

- 1-5' Universal.
- 1-5' Putnam.
- 1-5' Baush.
- 1-54' Baush.

BORING MACHINES

- 1-52" Niles Car Wheel Borer.
- 1-Beaman & Smith Horiz. Cylinder Boring and Milling.
- 1-6" bar Sellers Cylinder Boring and Facing machine.

PLANERS

- 1-24"x24"x 6' Hamilton.
- 1-24"x24"x 6' American.
- 1-26"x26"x 6' American.
- 1-26"x26"x 8' Gray.
- 1-30"x30"x10' Cincinnati, 2 heads.
- 1-36"x36"x10' Cincinnati, 2 heads.
- 1-36"x36"x13' Sellers Spiral, 2 hds.
- 1-36"x36"x17' Powell, 2 heads.
- 1-48"x48"x18' Sellers Spiral, 1 hd.
- 1-76"x48"x19' Woodward & Powell, 2 heads.

MILLING MACHINES

- 1-No. 14 Garvin Plain.
- 1-Garvin, Lincoln Type.
- 2-No. 32 Kempsmith, Lincoln Type.
- 1-No. 2 Brown & Sharpe Universal.

GEAR CUTTERS.

- 1-11" Gleason, Bevel.
- 1-No. 1 Robey-Smith, Bevel.
- 1-No. 2 Robey-Smith, Bevel.

TURRET & SCREW MCHES.

- 1-12" Foster-Kimball.
- 3-16" Pratt & Whitney.
- 1-18"x6' Lodge & Davis Cabinet.
- 1-21" Gisholt Turret.
- 1-22" Steidle Turret.
- 6-24" Gisholt Turret.
- 1-24" Warner & Swasey Chucking.
- 1-24" Foster Turret.
- 1-11" Pratt & Whitney Screw.
- 1-11" American Screw.
- 2-2"x24" Jones & Lamson, Geared Head.
- 1-2"x36" Jones & Lamson, Cone Head.

GRINDERS

- 1-4"x20" Morse Plain.
- 1-6"x32" Morton Plain.
- 5-12"x24" Modern Plain.

PRESSES, ETC.

- 1-36" wide Power Corrugating Roll.
- 1-96" Robinson Power Brake.
- 1-No. 2 Bethlehem Power Slitting Shear.
- 1-No. 2 Consolidated Inclinable.
- 4-No. 3 Consolidated Inclinable.

MISCELLANEOUS

- 1-1/2" Greiner Rotary Riveter.
- 2-7/8" Nutter-Barnes Cold Saws.
- 1-No. 525 Newton Steel Foundry Cold Saw.
- 1-Williamson Metal Band Saw.

Write for our Green List describing these and many others

HILL, CLARKE & CO. OF CHICAGO

649 W. WASHINGTON BLVD., CHICAGO, ILL.

New Boston Show Rooms
W. H. J. Fitzgerald & Co.
30 Oliver St., Boston

- 1 Foote-Burt Company No. 23 Heavy Duty Drill, 20" swing, single belt drive, capacity $\frac{3}{8}$ " to $1\frac{1}{4}$ ", guaranteed good as new.
- 2 No. 2 Warner & Swasey Turret Screw Machines, plain head, automatic chuck, bar feed, hand longitudinal feed to cut-off, with power feed to hexagon turret.
- 2 No. 1 Warner & Swasey Turret Screw Machines, plain head, automatic chuck, bar feed, lever feed to cut-off only, automatic chuck capacity $\frac{3}{8}$ ".

These machines are in A-1 condition.

Six $\frac{1}{4}$ Inch Automatic Screw Machines
(Stehli Patent)

Each fitted with screw slotting attachment. Manufactured by Hartford Machine Screw Company. These machines adapted to the rapid production of all kinds of small screws, bushings, studs, etc. Condition, good as new.

Machine Tools
Immediately Available

- One Kempsmith new No. 3 Universal Miller.
One Owen No. 0 back geared Plain Miller with 10" universal centers, good as new.
One Garvin No. 11 Plain Milling Machine, good as new.
One Becker-Brainerd No. 1 $\frac{1}{2}$ back geared Universal Miller, complete, excellent condition.
Two Gisholt 21" swing Turret Lathes, taper attach., excellent cond.
One Fifield 30"x10' triple geared Engine Lathe, excellent condition.
One Pratt & Whitney 24"x6' Planer, excellent condition.
One Pratt & Whitney 30"x14' Planer, one head, excellent condition.
One Chandler 36"x12' Planer with two heads, arranged for motor drive, high speed type, excellent condition.
One Whitcomb-Blaisdell second-belt drive planer, 26"x8', two heads on the rail, new.
One Bath Universal Grinder No. 2, 10x24, guaranteed practically new, complete equipment.
One Ditto No. 2 $\frac{1}{2}$, complete equip., 10x36, guaranteed practically new.

Factory & Mill Supply Co.
137 Oliver St., Boston, Mass.

Good Used Tools

BORING MACHINES.

2-spindle Moline adjustable center cylinder borer.

DRILLING MACHINES.

1-spindle Henry & Wright ball bearing, sensitive, 24 swing.
4-spindle 14" Foote-Burt.
6-spindle No. 4 Quint turret.
6-spindle Gardam.
4-spindle 26" Barnes, sliding head gang drills, 3 jaw chucks, (2).

14-spindle No. 0 Fox.
25" Blaisdell sliding head drill.
28" Snyder, sliding head, (2).
23" Rockford, sliding head, 1" chuck fitted.
10" Barnes sensitive, (3).

GRINDERS.

10x48 Pratt & Whitney plain.
No. 1 Connecticut, pwr. fd., wet att.
No. 2 Oakley univ. cutter and tool.
No. 11 Landis plain.
BX Yankee tool grinder.
12x60 Landis universal.
10x36 Norton.
No. 11 Rivett, oscillating.

No. 6 Bryant internal.
48"x6" Springfield, surface.
"H" Point Yankee twist drill.
No. 14 Cinn. cylinder and internal grinding attach. Surface and gear
4" cutter grinding attachment.
3' P. & W. vert. surface, with 30"x10" Walker magnetic chuck.

LATHES.

14"x8' Prentice Brothers, compound rest.
16"x6' LeBlond, c. c., 5-step, c. r., p. c. f., 14" h. s.
16"x6' Porter, 5-step, pl. rest, p. c. f., special draw-in chuck.
16"x8' Lodge & Shipley, q. c., 5-step, taper att.
18"x8' Perkins.

17"x8' Hamilton, 5-step, c. r., p. c. f., 14" h. s.
20"x12' Fifield.
26"x12' Putnam, d. b. g., c. r., (2).
30"x10' Gleason, plain rest, power cross feed.
38"x20' New Haven.
56"x24' Wood Light.

MILLING MACHINES.

No. 3 Fox plain, power feed.
No. 14A Garvin plain, (5).
No. 14 Garvin plain, (7).
Rivett swivel miller.
No. 3 Van Norman duplex.
No. 12 Brown & Sharpe manufacturing miller.
12" Cincinnati plain mfg.

Grant manufacturing.
No. 2 Pratt & Whitney, Lincoln miller.
No. 2 Brown & Sharpe vertical, 20" circular att., power feed.
No. 3 LeBlond plain, all power fds., geared feed box.

SCREW MACHINES.

14" No. 54 National Acme auto.
20x7 Fay & Scott, turret.
24" Gisholt, turret.
4" style "A" Cleveland auto., (2).
2" Cleveland automatics, (32).
3x36 Jones & L. flat turret, sliding hd., bar equip., die head and tools.
4-sp. National Acme automatic, with stock stand.
No. 3A Potter & Johnston auto. chucking machine.

24" Davis turret chucking lathes, set-over turret, friction grd. head, p. f., 4" belt, 2 1-16" h. s.
No. 1 W. & S. hex. tur. lathes, fric. b. g. hd., auto. chuck and roller fd.
Rivett, wire feed.
Pratt & Whitney.
National Acme automatic.
14" Rivett, plain turret.
No. 1 Brown & Sharpe, hand feed, (3).

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26x10 Cincinnati.

No. 2 Whiton.

MISCELLANEOUS.

Brake, 4' Ohl, double cam.
Keyseater, No. 1 Davis.
Pinion cutter, No. 1 Slate.

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 Drill, 28" Hamilton, sliding hd.
 Drill, No. 2 Quint 6-sp. turret.
 Elect. tool post grinder, No. 2 Willey, 110 v., 60 c., 3 p.
 Gear cutter, 36" G. & E., spur.
 Grinder, Greenfield, cutter.
 Groover, No. 518 P.S. & W., pwr.
 Hack saw, No. 1 Racine.
 Hack saw, No. 5 Marvel.
 Hammer, 50 lb. Little Giant, pwr.
 Hammer, Smith auto., power.
 Lathe, 16x8 Bogart standard.
 Lathe, 18x8 Greaves-K. standard.
 Lathe, 18x10 Cinti. standard.
 Miller, No. 35 Chicago, hand.
 Miller, No. 3 heavy, plain.
 Millers, No. 1-C Fox plain, (2).
 Miller, No. 25 Bilton plain.

Miller, No. 1½ Valley City plain.
 Molding mch., portable, Arcade.
 Presses, No. 2 Consolidated inclinable, (2).
 Press, No. 3 Consolidated incl.
 Press, No. 10 Excelsior, foot.
 Punch press, No. P-3 Ferracute.
 Rolls, drawing & forming, Port Huron.
 Riveter, No. 0 Cleveland electric.
 Rolls, power forming, No. 400 P. S. & W.
 Roll fd. for D-3 Ferracute press.
 Screw mch., 4" American, hand.
 Setting-down machine, No. 564 P. S. & W., power.
 Shear, No. 16-P Len., throatless.
 Shear, cir., No. 278 P. S. & W.
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Machinery Department
The
W. M. Pattison Supply Co.
Cleveland **Ohio**

New and used machine tools for sale or exchange in part or full payment for the larger tools specified below.

PLANERS—GOOD CONDITION—NOW IN USE.

2 Flatthers, 36"x36"x16', 2 hds. on crossrail. 1 Rockford 36"x36"x13' table, 2 hds. on crossrail, two side hds. and one extended head on separate housing, 1 Putnam very hvy. type, 42"x42"x11'6", 2 hds. on crossrail. 1 Niles 36"x36"x10' table, worm drive, 2 hds. on crossrail and 2 side hds. 1 Betts 34"x36"x9'6", one head on crossrail.

PLANERS—NEW—USED SEVERAL MONTHS.

1 Wilson 36"x36"x9' table, with two heads on crossrail, steel rack, bull gear and pinion. 1 Bickett 36"x36"x12' table, with two heads on crossrail, steel bull gear and pinion. 1 Simmons open side, 48"x42"x14' table.

SLOTTERS—GOOD CONDITION—NOW IN USE.

1 each, New Haven and Miles, 12" stroke; 1 Niles 20" stroke; all auto. feed.

SHAPERS—NEW—ONE YEAR AGO.

10 Cincinnati 20" stroke, power down feed to head. 1 Gould & E., used, 26" stroke, down feed to head, thoroughly overhauled. 1 Steptoe, used, 20".

LATHES—NEW—TWO YEARS AGO.

2 Harris Corliss 24"x14' bed, double back gear. 1 Harris Corliss 24"x12' bed, double back geared. 1 New Haven, triple geared, 36"x16', used, good cond.

DRILL PRESSES.

1 Fosdick Radial, square column, 30" arm, tapping attachment. 1 Prentice Radial, square column, 48" arm, gear box drive and tapping attachment.

MISCELLANEOUS.

1 Bement horizontal boring mill, 3" bar, 60" swing. 1 Cincinnati No. 2 univ. cutter and reamer grinder. 2 Double end Dallett rope drive drill presses for horiz. drilling, with extended base. 2 Straddle cranes for loading planers, cap. two tons provided with swivel casters; will carry work directly to planers with minimum handling and labor. 1 Lourie 5 ton hydraulic press, 24" between posts. Small lathes, milling machines and other tools.

Let us have your inquiries and we will buy or exchange for following tools, which must be of modern design and first class condition:

VERTICAL BORING MILLS.

1 each 60" and 84" with two heads on crossrail and one side head.

LATHES.

1-60"x30', triple geared, heavy duty. 1-48"x24' to 30', triple geared, heavy duty. 1-36"x20' to 24', triple geared, heavy duty. 2-24"x14', heavy duty, double back geared. 1-24"x12', heavy duty, double back geared. 1-24" to 30"x16' to 20' heavy duty boring lathe. 1-24"x8' chucking, two post turret.

PLANERS.

1-48"x14' to 16' table, two heads on crossrail and one side head. 1-60"x20', two heads on crossrail, two side heads. 1-48"x14' Dietrich & Harvey open-side, two heads on crossrail and one side head.

DRILLS.

1-Baush high speed multiple, 16 spindles, 1" capacity. 1-Baush high speed multiple, 12 spindles, 1" capacity. 1-Radial, 6' arm, with gear box drive and tapping attachment.

MOTORS.

4-25 h. p., a. c., two ph., 220 v., 2-10 h. p., a. c., 220 v., single or double ph.

MISCELLANEOUS.

1 Hydraulic Press, 10 tons capacity, 36" between posts. 1 Universal cutter and reamer grinder, with internal grinding attachment, capacity 10 to 16" swing. 1 Universal milling machine, equal to No. 3 Cincinnati. 1 Bevel gear cutter or shaper, 24" diameter capacity, automatic. 1 Spur gear cutter, 24" diameter capacity, automatic. 1 Spur gear cutter, 48" diameter capacity, automatic. 1 Cold saw, 10" diameter capacity. 1 American hardening furnace, 12 to 16" door opening, complete with blower. 1 Case hardening outfit.

FOUNDRY EQUIPMENT.

1-25 ton capacity cast iron plant complete. 1 steel building for same. 1 steel building 55"x330', preferably with one side gallery and provision for crane runway from one wall, 34' span. 1-15 ton electric crane a. c. power 34' span. 1-25 ton elect. crane a. c. pwr. 34' span. Complete equipment for pattern shop.

All tools and equipment will be inspected before purchase

Lutz Company, Inc., Mark for Department A
31st & Gray's Ferry Road, Philadelphia, U. S. A.

Contract Work Wanted

This department is exclusively for the use of those desiring to secure contracts for anything in the line of foundry or machine work, including press work, dies, jigs, fixtures, gears, die castings, drop forgings, screw machine products, springs, bolts, nuts, rivets, etc. Advertisements are to be set with side headings as shown, and with such display as may be appropriate to the copy used. Rates: one-eighth page, per month, \$4.

<p>Gauges, Jigs Dies, Tools and Light Machinery</p>	<p>The Model Tool & Gauge Co. 61 Foote St., New Haven, Conn. Quick deliveries on gauges, jigs, dies and tools. Light machinery built on contract. Send us your specifications. We shall be pleased to quote.</p>
<p>Dies Tools Special Machinery</p>	<p>Robbins, Gamwell & Co. Pittsfield, Mass. Accuracy and efficiency in gages, dies and special machinery, is our specialty.</p>
<p>Dies Pressed and Stamped Steel Parts</p>	<p>Alsteel Manufacturing Company Battle Creek, Mich. Accurate and durable dies, pressed or stamped steel parts, 10 gauge or lighter, are what we specialize in. Send for our estimates.</p>
<p>Gray and Malleable Iron Castings Die Castings</p>	<p>Lough Brothers 90 West Street, New York City Gray iron castings, one ounce to twenty tons. Malleable iron castings. Die castings in aluminum, tin and zinc alloys.</p>
<p>Dies Gauges Fixtures Special Machines</p>	<p>The Steber Machine Co. Established 1891 Utica, N. Y. Incorporated 1906 We have made a specialty of accurate work for the past 27 years.</p>
<p>Drop Forgings (All Kinds)</p>	<p>Bonney Vise & Tool Works, Inc. Allentown, Pa. Quick and Accurate Drop Forging and Finishing Good tools, good men, and good management insure precision and promptness. Investigate; when you know our facilities and our record you'll want our service.</p>
<p>Pressed and Stamped Steel Parts</p>	<p>Geuder, Paeschke & Frey Co. 1325-1700 St. Paul Av., Milwaukee, Wis. It will pay you to let us figure on such pressed, stamped or drawn metal articles or parts as you may require, be they made of steel, aluminum, brass or copper. Our 15-acre plant at your disposal. Get the benefit of our "Knowing how since '81." Send samples or blue prints for est.</p>

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The "New Britain" All-Steel Bench Drawer

Inside Dimensions, 18"x16"x5"

Outside Dimensions, 19"x16½"x5¾"



This light, strong, unbreakable all-steel bench drawer is furnished as a unit, requires no fitting, and is easily and quickly installed without cutting the bench. Shipping weight, 40 pounds.

A hem of triple thickness around the upper edge and the welding of all joints provide unusual strength and durability. The slide ways are integral with the top and insure a smooth, free movement, without tendency to bind.

A solid sheet metal top makes impossible any pilfering from the rear. It also prevents blocking or a lockout through wedging of contents, and it excludes any water or oil that might occasionally soak through from above.

Provided with good cylinder lock and two individual keys. Master keying, if desired, furnished at cost, for giving the foreman free access to all drawers with one key.

You will find the price very reasonable for a drawer of such permanent utility, convenience and safety.

Folder No. 1202-A explains fully. Write for it.

The New Britain Machine Company

**"Shop Furniture
Originators"**



**New Britain,
Conn. U.S.A.**

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"Modern" Plain Grinding Machines

Have a Rigid Self-Contained Drive



The type of drive provided for MODERN Plain Self-Contained Grinding Machines assures rigidity and smooth, precision grinding.

The concentration of all levers and hand wheels at the front of the machine assures quick, easy operation.

The main drive shaft runs at a constant speed; power is applied from line shaft to tight and loose pulley, or motor drive is optional.

All revolving pulleys, gears and shafts are completely guarded.

Economy of floor space, compactness and comparative simplicity of mechanism are notable points in MODERN construction.

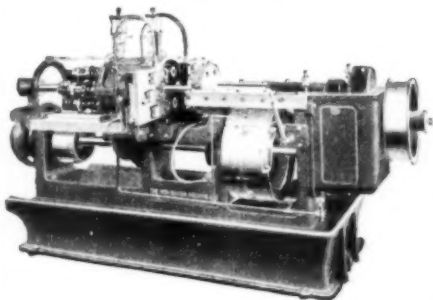
Modern Tool Company

Main Office and Works, 2nd and Peach Sts.

Erie, Penna.

A Six-fold Production

On Rolls, Sleeves, Pipe Couplings,
Nuts, Stud Blanks, Etc.



"New Britain" Sextuple Automatic Bar Machine

It feeds, drills, faces, chamfers and cuts off in six spindle positions simultaneously.

A heavy cross slide on each side accommodates cut-off and forming tools for operations on three bars of stock—six in all. The end tool slide has six positions for necessary drills, facing and chamfering tools, etc. On plain cutting-off jobs the tool slide carries six stops for accurate feeding to length of pieces to be formed and cut off.

Write for Bulletin No. 955, with description of machine and full-size illustrations of work to which it is adapted, and the production.

The New Britain Machine Company

Automatic
Screw and Chucking
Machines



New Britain,
Connecticut,
U.S.A.

